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ORIGINAL COMMUNICATIONS.

THE USE OF RADIUM IN OVER ONE HUNDRED CASES.[1]

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Where radium is to be employed the quantity should be sufficient to dispel all doubt that failure to obtain the desired result might possibly be due to that cause alone. We are well aware that the amount used in the treatment of cases included in the appended list was much smaller than is usually recommended; however, as the supply was limited and the demand great, it behooved us to use such means as was at our command for the relief of these hapless cases which came under our observation. In all but a few exceptions, in this list of over 100 cases, radium was only employed after all other methods had failed; many of them had previously received other forms of radiation, such as the *x*-ray, before claiming our attention, or where it had not formerly been used, it was given the preference, for a twofold reason: First, because we were better equipped for its administration; and secondly, our supply of radium was extremely limited. The only variation from this rule was in those instances in which for some reason *x*-rays could not be employed. These exceptions referred to were included in this list to exclude any error of judgment in preparing a special list for the correlation of results that might be misleading.

From the individual reports of cases results often appear to be extraordinary, but frequently upon closer examination it will be found that the element of time has not been given sufficient cognizance, nor has the material been properly digested before arriving at ultimate conclusions. The word cure is too often used to imply that the local disease has temporarily disappeared, thereby giving a false interpretation of the results *per se*, and one of the best articles upon this subject has been published by Mr. Pinch, of the Radium Institute of London, which establishes a standard, and is a classic from the fair and impartial manner in which his deductions have been made. Here the results cannot be questioned, as the amount of radium employed and the technique adopted dispel all chance of error that might be due to absence of these conditions. In Germany the use of mesothorium has to some extent displaced radium, it being claimed by some individuals that the character of radiation is far more active, and therefore the result to be expected should be proportionally better; here again the element of time is needed for the proof of this statement. The objection that is raised to the thorium preparation is that the rapid disintegration requires constant correction, at frequent intervals. If this procedure is not observed the actual amount of radiation given at a definite period would be unknown. It is not difficult, however, for one accustomed to its use to make this calculation, but it must be remembered that its total disintegration is only a matter of a few years.

The prevailing idea that these radioactive elements will prove to be a panacea is false

[1]Read before the College of Physicians of Philadelphia, February 4, 1914.

and has misled many, giving them a mistaken feeling of security that has often caused these unfortunate sufferers considerable inconvenience. It cannot be denied that in some instances it has afforded relief, sometimes only temporary, often permanent, that is most marvelous; it has, and will have, a distinct field of usefulness in a certain class of cases, and so far there seems to be no means to substitute these radioactive elements, although at the present time we cannot have hard and fast rules to govern the exact character of case that will be benefited by this form of radiation, yet it must be admitted that certain conditions exist which are, and will be, treated with better results by the Roentgen ray. This is well exemplified in some forms of carcinoma of the breast.

It might be said in comparison with the Roentgen ray, aside from any peculiar physical property these radioactive elements may possess, that there are two local conditions favoring their use: First, in the treatment of disease in cavities, such as the mouth, rectum, or vagina; and secondly, where an intense local action is desired with little disturbance of the surrounding tissue. The technique used, in all forms of radiation, is a matter for serious consideration and calls for detail in future study. We have all heard references made to some conditions relieved by one operator which have not been previously benefited by another. It must not be inferred from this that the latter operator had more radioactive material, possessed a more refined technique or better Roentgen apparatus than the former—indeed, in several instances that have come under observation the conditions were rather the reverse, otherwise this point would not be worth considering. While on general principles large amounts of any of the radioactive elements should be employed, yet some malignant processes will yield to extremely small quantities; and many instances have been reported in which the amount used has been less than 5 milligrammes of radium element.

The word "cure" has been omitted in this list of cases, and where the local condition disappeared the letters W. M. E. D., which indicate "without manifest evidence of disease," have been adopted. "Marked improvement" has been used, where healing was complete locally, but disease was more or less evident in adjacent structures; "improved" where the ulcerations for a time show some sign of decided improvement. The remaining words call for no explanation. It seems needless to remark that in all instances the diagnosis was confirmed by microscopic examination, and where this was not possible it was regarded as non-malignant; for example, the recurrent papillomas and cysts were in reality not actual benign tumors.

The general weakness of this list can be readily seen in the deep cases, such as carcinoma of the esophagus, breast, rectum, etc., possibly attributable to the lack of sufficient amount of radioactive material, thereby not being able to give the required amount of deep radiation. Again referring to the report of the Radium Institute of London, we find a wide variation between the deep and superficial conditions. In a series of cancer of the rectum, including 43 cases, one was cured and nine were improved, while 101 cases of rodent ulcer were treated, with 31 cured and 41 improved.

The two cases of epithelioma of the eyelid might possibly have been treated by the *x*-ray; however, as in each instance there were other reasons for not adopting that form of radiation, there is not the least doubt that in all probability they would have made as prompt a recovery, but it is questionable if it would have occurred with so little inconvenience. This also refers to one case of epithelioma of the forehead, and while many such cases have been reported as cured by the use of radium, it must be remembered that the great majority would have healed as well under the influence of other forms of radiation. This, however, cannot be said about such conditions as carcinoma of the uterus, or carcinoma within the mouth; in both there appeared for treatment cases that were almost moribund; they reacted, and have been

temporarily restored to health. In some of the other uterine cases the hemorrhage was checked enough, within a week or so after the first application, to enable the individual to go about her routine work, after having been absolutely useless and practically bedridden. The results are past conception, and strange as it may seem, this outcome was produced in one instance by the use of only 1 mg. of radium element, a report of which was made a few years ago in detail. The absolute disappearance of the disease in these late cases seems to be exceptional, even where large amounts of radium have been employed, and while comfort with temporary healing is often afforded them, we must not forget that the old adage of the "ounce of prevention" is to be always observed.

No doubt all malignant processes removed by operation will be radiated in the near future, for it seems that any agent of such value in these late cases should be a valuable postoperative procedure.

In carcinoma in and about the mouth we are again forced to acknowledge the powers of radium and mesothorium. Although the results generally do not appear to be so good as those of the uterus, they have in several instances been most gratifying. Here again we notice the same wide variation of results. Often those cases which seem to be the most favorable from their history and general appearance are in the end the most fatal; conversely, those which appear to be extremely unfavorable change for the better with such ease that it is often inconceivable. In these two last mentioned

	W. M. E. D.	Marked improvement.	Improved.	Doubtful.	Not improved.	Left.	Died.	Remarks.
EPITHELIOMA:								
Ear	....	....	....	....	1	....	....	
Eyelid	2	....	....	....	....	....	....	
Face (rodent ulcer)	1	....	....	....	1 ?	....	....	? Operative treatment substituted.
Forehead	3	....	....	....	....	....	....	
Hand	....	1	....	....	....	....	....	
Larynx	....	....	1	....	....	....	....	
Lip	....	2	....	....	1	....	....	
Mouth	....	....	....	....	4	....	1	
Buccal surface	....	1	?	....	....	....	....	? Operative treatment substituted.
and leucoplakia	1	....	1	....	1	....	....	
Nose (rodent ulcer)	3	....	....	1	....	....	....	
Palate	1	....	....	....	5	....	2	
Pharynx	....	....	....	....	1	....	....	
Scalp	....	....	1	....	....	....	....	
Tongue	....	....	....	....	....	....	1	
CARCINOMA:								
Axilla and neck	....	....	1	....	....	1	....	
Breast	....	....	....	....	3	....	....	
Colon	....	....	....	1	1	....	....	
Face and neck	....	....	....	....	1	....	....	
Nose (mucous surface)	....	1	....	....	2	....	....	
Palate	....	....	....	....	1	....	....	
Esophagus	....	....	....	....	1	....	....	
Pharynx	....	....	....	....	....	....	1	
Rectum	....	....	....	....	3	1	....	
Tongue	....	....	1	....	2	?	....	? Was improved.
Tonsil	....	....	....	....	2	....	....	
Uterus, body	....	....	2	....	1	....	....	
cervix	....	2	6 ?	....	4	2	....	? Operative treatment substituted.
Vagina	....	....	....	....	1	....	....	
Uterus, vagina, and bladder	....	....	....	....	....	1	....	
Vagina	....	....	....	....	1	....	....	
Vagina and bladder	....	1	....	....	....	....	....	
SARCOMA:								
Antrum	....	....	....	....	1	....	....	
Choroid	....	....	....	....	1	....	....	
Multiple	....	....	....	....	1	....	....	
Orbit	....	1	....	....	....	....	....	
Osteo, orbit	....	....	....	....	1	....	....	
Skull	....	....	....	....	1	....	....	
Sternum	....	1	....	....	....	....	....	
Serocystic, of face	....	....	....	....	....	1	....	Improved.
Papilloma of chest	1	....	....	....	....	....	....	
tongue	....	....	....	....	....	....	1	Died of heart disease while under treatment.
mouth and leucoplakia	1	....	....	....	....	....	....	
Cyst (mucous), mouth	1	....	....	....	....	....	....	
Nevus, cavernous	....	1	....	....	....	....	....	
Spring catarrh	....	....	....	....	1	....	....	
Chloasma	....	....	....	....	1	....	....	

regions there must be some direct action between the variety of disease and the form of radiation, for these favorable results were not observed in cancer of the colon. Results seem to be better where it was possible to bring the radium in direct application in the same manner as was done in the mouth and uterine condition.

That the action of these rays differs from the ordinary *x*-ray is well shown in this list, where good results follow the application of radium after previous use of *x*-ray failed, notably in the two cases of sarcoma and the one of papilloma. This fact has been observed by others, and in a sufficient number of cases to prove that there is a difference in the so-called selective action of these rays.

In ending, while not expressing any general conclusions, attention might be called to the fact that all the results here given were accomplished by applications from 1 to 20 milligrammes of radium, with very little filtration, where the condition was superficial; in those of any depth it was customary to use a screen consisting of a piece of lead a millimeter in thickness, wrapped again in cotton and rubber tissue (often a glass or celluloid tube was used in place of the rubber tissue). In several instances burns were produced, but healing promptly followed.

UMBILICAL HERNIA AND LIPECTOMY.[1]

BY WALTER LATHROP, M.D., STATE HOSPITAL, HAZLETON, PA.

The radical cure of umbilical hernia by means of overlapping fascia, by the Mayo method, is so well known and practiced by all surgeons that it seems superfluous to dwell upon this subject, yet the fact that umbilical hernia is still a dangerous abdominal condition, and has its range of complications and fatalities when allowed to exist, is a sufficient excuse for bringing it before you this evening.

In the normal closure of the umbilicus, after birth, we have several changes taking place: "(1) Contraction, and shrinkage of the umbilical ring, dividing, by its closure, the umbilical vessels running through the ring. (2) Clotting of the vessel contents—proliferation of connective tissue—and contraction of the muscle fiber of the vessels. As a result of this, a firm fibrous scar is thus formed at the site of the umbilicus." (Bickham.)

We can easily understand that the scar tissue may remain weak for some time, and also may be subjected to strain, and later give rise to hernia, which usually comes by way of the umbilical ring, or may even come through the abdominal wall in the vicinity of the ring.

[1]Read before the Luzerne County Medical Society, Dec. 10, 1913.

Umbilical hernia is more frequent in women than men, the proportion being about twelve to one. The relaxation of their abdominal muscles, especially the distention due to pregnancy, tends toward this condition. The hernia often reaches a very large size, and may contain omentum and small intestine, or omentum, stomach, and large intestine; usually it contains the former, and when of long standing has numerous pockets, or sacs, and often is irreducible, is at times painful, and is always a source of danger from strangulation. I had one case, in March of this year, which presented the rather interesting condition of a complete diastasis of the recti muscles. There was an enormous mass hanging down, which consisted of the intestines, omentum, and a distended gall-bladder. This trouble began after pregnancy and was given no attention by the woman, and after the third child was born she had an extreme protrusion, which was held back temporarily by a belt, but it was in vain, and her physician brought her for operation. It was rather difficult to separate the adherent structures, but this was finally accomplished, the gall-bladder opened, and a large number of stones removed, the chief offender being in the cystic duct.

Owing to the wide diastasis, from above the umbilicus almost to the pubis, I closed the gall-bladder with no drainage, the only time I have ever done it, and with some apprehension, but it seemed wise in this case, and fortunately never gave any trouble. The diastasis was completely closed by double suture, which overlapped the fascia, and by the continuous mattress method of Cushing. She made a good recovery, and in October was quite well, with no sign of recurrence, after nearly eight months.

Before the advent of the Mayo operation the treatment of umbilical or other ventral hernia was very unsatisfactory, and usually meant a return in a short time, for where muscles were used they formed only a weak point of resistance to abdominal pressure, and we know that fascia is necessary for support in these cases, that the aponeurotic structures here are very strong, and when once placed in position by overlapping we have a splendid plane of resistance.

The operation is comparatively easy, and consists in making two transverse elliptical incisions, exposing the neck of the sac and aponeurosis for same distance above and below it.

The sac is opened, and adherent omentum or gut released; the omentum should be ligated in sections. The closure is by means of mattress sutures, passed so as to draw the lower flap well up and under the upper, after which the other edge is sutured by a continuous stitch. Linen was formerly used, but with the possible exception of one or two anchoring sutures of linen, I have used heavy chromic gut.

In connection with this subject of large hernias I wish to call your attention to the operation of *lipectomy,* or the removal of a greater or less amount of skin and fat from the abdomen. Kelly in 1899 reported a case, but little came of it, though other cases were reported by Maylard in 1907, Schulz in 1908, and Weinhold in 1909. Kelly again wrote in 1910, advising this operation, and it has been done more or less deliberately since that time, and is a very beneficial procedure in every indicated case.

We all know that when fat becomes excessive, and fails to perform its functions, it becomes a nuisance, and a burden to its owner. Fat has among its uses the preservation of the body, and also the aiding of beauty by rounding out or helping the symmetry of the body. An extra amount renders the usual activities of life a burden, when exercise is needed, enjoyed, or demanded. Where sedentary habits are aided by the possession of too much fat, the vital organs are more or less affected in their power of metabolic change and the individual usually eats heartily, with a continued increase of weight. When the fat is distributed evenly we can only suggest diet, proper hygiene, and exercise. Such patients need the care of the physician, and they are of little general interest, for they usually pay little heed to the advice of the doctor, are often discouraged by slow improvement, and again become users of patent remedies of whose virtues they read in skilful advertisements, and thus injure their systems by the use of powerful injurious concoctions.

The second class is different; here we have large areas of fat that can be removed, and give relief in most instances. We will consider only the accumulation of adipose tissue on the abdomen, and seen so constantly associated with umbilical hernia. Exercise is seldom taken in any sort of proper manner; sedentary habits lead to the usual hepatic troubles, to constipation, and more or less cardiac lesions. Hernia may or may not be present.

The woman with pendulous abdomen frequently wears so-called form-fitting or stomach-lifting corsets, in an effort to mold the form into a more pleasing appearance, and again these women are prone to eczema, or to chafing in the folds of fat lying in each groin. These individuals can be relieved of some of this surplus, and the folds of fat all removed from the lower abdomen, in a sufficient amount to give comfort. The operation, whether done during the work for a hernia or for deliberate re-

moval, is easy to carry out, and requires only careful attention to detail, such as *hemostasis,* careful apposition, and the *provision for drainage at each end* of the very large incision, as there is a good deal of oozing of serum and fatty débris for two or three days. If the abdomen is seized above and below, we find a large amount of tissue can be raised between the hands, which when brought together will give an idea of how much can be removed. The incision is elliptical, beginning well over on the side, and extending to the corresponding point opposite, while its center below would be a few inches above the pubis, and the upper above the umbilicus. It should go to the fascia, and then the whole amount of tissue in the area be removed. The closure is easy, and should be done with deep catgut sutures, reënforcing with silkworm. I usually wipe out the wound with a 3-per-cent iodine solution before closing. The after-treatment, if a hernia has been repaired, would consist of semisitting posture, care of the bowels, and rest in bed for at least twenty-five days. If no hernia is present, then a recumbent posture for at least ten days, followed by a semirecumbent position for a week.

The diet of these cases is chiefly milk in small quantities, and water with lemon juice. They usually lose a good deal during convalescence, and if advice is followed will be greatly benefited for a long time. One case is reported by Castle, in which the woman lost sixty-five pounds in a very few weeks, including what was excised from the abdomen.

I operated on a very stout woman in January last, and excised nearly sixteen pounds. She made a rapid recovery, and when last seen, a few weeks ago, was quite well, and stated that she had been very active since the operation and had lost thirty pounds; she now felt better, and certainly looked the part. I am confident that lipectomy is beneficial, and will give enough temporary relief to warrant its performance, while if the patient will follow the advice given as to diet, exercise, etc., the relief should be very marked and last a long time. I have operated on forty-six uncomplicated umbilical hernias of all sizes with no deaths, and on eleven that were strangulated, or incarcerated, with three deaths—a total of fifty-seven. In the last twelve cases I have performed lipectomy with excellent results, and expect to do so in all future cases in which strangulation or incarceration is not present, for in such conditions we must complete the hernia operation as rapidly as is consistent with safety.

In connection with this subject, there is a class of cases that are often very trying to the surgeon, and in which a small lipectomy is most helpful. I refer to the difficulties of abdominal operations in stout persons, where the thick walls of fat increase the distance from the surface to the parts to be reached, compelling the operator to work in a deep space with a wall of fat on each side of the ordinary incision. In some cases accurate suturing is made very difficult, if not almost impossible, by reason of this condition, and here again Kelly has made the valuable suggestion in an article on the "removal of a skin-fat wedge," in which the difficulties are overcome in a large measure by an oval excision of skin and fat down to the internal abdominal wall, removing the skin section either transversely or in a vertical direction, corresponding to or at right angles with the deeper incision. This removes the thickness of the wall down to the fascia, while from there into the abdominal cavity the depth is not great, and the opening and closing are rendered comparatively easy, while the final closure of the skin is of no difficulty, and again reduces some fat, though of course much less than in the regular planned excision of lipectomy.

Kelly in his article says: "If the patient is excessively fat, one will naturally do a regular lipectomy operation. I wish, however, to emphasize the value of removing wedges of skin and fat in patients who are not troubled with obesity, but simply and solely for getting rid of a part of the thickness of the abdominal wall and making the field of operation more accessible. All

bleeding vessels should be carefully tied; when the piece of skin and fat is removed, the operator then finds it much easier to open the abdominal wall and operate than in a similar case in which he has to retract this mass of tissue as well." I can confirm this in my own experience, and feel sure that those who have done it are pleased, and those who have not will find it a help in certain classes of usually troublesome cases.

In a personal communication dated December 1, 1913, Dr. Kelly says in reference to lipectomy: "I do it regularly whenever I have a patient who has a heavy, pendulous mass of fat on her abdomen, or in whom the mass of fat is sufficient to make a crease in the lower abdomen and to stand in the way of her taking proper care of her person. Naturally most of my cases have been those which have needed surgical operation upon some intra-abdominal organ. However, I have by no means limited my operations to that class, but consider the operation one of sufficient importance to be done solely for the relief it offers in the appropriate cases. My operations have been done, for the most part, by cutting a watermelon slice off the abdominal wall from one lumbar region across the front of the abdomen to the other. I have not tried the trefoil operation used by some of my friends in Europe, but it ought to be a valuable adjuvant, as it takes off another wedge of fat in the median line above. The lipectomy operation is particularly valuable in patients with umbilical hernias where it frees the operator from any embarrassment in handling the hernia, giving him a delightfully open field for his work.

"May I add here a memorandum that in bad cases of umbilical hernia I have materially modified Dr. Mayo's operation by carrying the incision through the fascia on both sides, all the way out to or even beyond the outer border of the rectus muscle? This introduces the feature of a strong lasting lateral support, and takes the strain off the middle operation at the weakest point of the tissue. The mechanism is much like that of a man whose trousers have dropped down, and who grabs them with one hand on each side to pull them up and hold them securely in place.

"Again, a very important point in closing the transverse lipectomy wound is that in fat patients there is a distinct strong layer of fascia about half-way between the skin and the deep fascia of the abdomen. This exists in all patients, but the accumulation of fat brings it into remarkable prominence. It is a valuable asset in sizing up the wound."

CASES IN WHICH LIPECTOMY WAS PERFORMED.

1. M. C., aged 35, Hazleton. Admitted January 22, 1912. Discharged February 21, 1912. Umbilical hernia (pendulous abdomen). Lipectomy. Cured.
2. T. H., aged 45, Hazleton. Admitted February 23, 1912. Discharged March 20, 1912. Umbilical hernia. Lipectomy. Cured.
3. A. R., aged 50, Freeland. Admitted March 27, 1912. Discharged April 24, 1912. Umbilical hernia (pendulous abdomen). Lipectomy. Cured.
4. K. K., aged 59, Coaldale. Admitted July 22, 1912. Discharged August 17, 1912. Umbilical hernia. Lipectomy. Cured.
5. E. M., aged 40, Hollywood. Admitted August 18, 1912. Discharged December 27, 1912. Umbilical hernia. Lipectomy. Cured.
6. T. W., aged 56, Harwood. Admitted September 5, 1912. Discharged October 24, 1912. Umbilical hernia (pendulous abdomen). Lipectomy. Cured.
7. F. P., aged 59, Hazleton. Admitted September 10, 1912. Discharged October 12, 1912. Umbilical hernia. Lipectomy. Cured.
8. H. G., aged 43, Hazleton. Admitted September 22, 1912. Discharged October 24, 1912. Umbilical hernia (pendulous abdomen). Lipectomy. Cured.
9. A. W., aged 44, Freeland. Admitted December 2, 1912. Discharged December 6, 1912. Umbilical hernia (dilatation of heart). Died December 6, 1912.
10. F. S., aged 39, Hazleton. Admitted January 10, 1913. Discharged February 5, 1913. Pendulous abdomen. Lipectomy. Cured.
11. M. R., aged 43, Hazleton. Admitted April 19, 1913. Discharged June 9, 1913. Umbilical hernia. Lipectomy. Cured.
12. I. B., aged 41, West Hazleton. Admitted April 2, 1913. Discharged May 23, 1913. Umbilical hernia (pendulous abdomen). Cured.
13. A. S., aged 64, White Haven. Admitted May 26, 1913. Discharged June 19, 1913. Umbilical hernia. Lipectomy. Cured.

These patients were all greatly improved in appearance and comfort, while the heavy or pendulous abdomen was greatly lessened. The fatal case recorded had an incarcerated mass, bowel and omentum. In all cases from three to sixteen pounds was removed.

Since writing the above, we have had two more cases, making 15 in all. Both operated upon in January and still in hospital; improving rapidly.

THE NON-EMPIRICAL TREATMENT OF DIABETES—A REVIEW OF MENYHERT'S THEORY.

BY S. RINGOLSKY, M.D., SAN FRANCISCO.

Why continue treating diabetes with an empirical diet? Why not treat it according to the science of pathologic physiology? So says Dr. Wm. Menyhert, of Budapest, who has given to this subject alone eight years of his life.

My attention was first directed to the Menyhert therapy a little over a year ago, while I was in Berlin. By chance I read an article written by him, published in the *Wiener Medizinische Wochenschrift,* No. 35, 1912, which was in answer to a criticism of Von Noorden on one of his former published articles. I immediately wended my way to Budapest to investigate personally and to see a practical demonstration of this new treatment. On my arrival I at once sought an interview with Dr. Menyhert. After informing him of my mission, he said he was very pleased that I came and would do everything in his power to make his theory and method of treatment as clear as possible to me. The following day I was taken to the I Medical Clinic of the University of Budapest, and was introduced to Professor v. Ketly, who was in charge. My presence was explained to him. Professor v. Ketly stated that the Menyhert treatment for diabetes was a great step forward. While it was not held to be an absolute cure, he hoped that Menyhert might eventually perfect it as such; that the results obtained so far exceeded the empirical method; that in his ward of 400 beds no other treatment was permitted. They have treated over 600 severe cases successfully, and have not had a single case of diabetic coma in six years, not even among their severest juvenile cases. The clinic was at my disposal for any investigations I might desire to make.

Menyhert's Theory.—In order to work up to Menyhert's theory, it becomes necessary to review a few of the simplest principles of the physiology of digestion. During the first process of digestion the food meets with the ptyalin, the powerful diastatic ferment of the saliva. A similar ferment has been demonstrated by various workers to be present also in nearly all the organs of the living body as well as in the circulating lymph. The saliva is alkaline in reaction. In the stomach it meets with the HCl and pepsin, where the acid peptones are formed, and finally finds its way to the intestinal tract, where it again meets the alkaline juices and where the alkali peptones are formed. The principal secretion found here is the pancreatic juice, the only location in the body where the diastatic, proteolytic, and lipolytic ferments are found combined in one secreted fluid. Von Noorden says sugar can be formed from fat and albumin, ovalbumin containing from 10 to 15 per cent carbohydrate, serum albumin 1 to 2 per cent, and muscle albumin 1 per cent. Therefore there must be either a saccharificating ferment already present in the living organism, or it is formed during the chemical processes of digestion, which are capable of manufacturing sugar not only from carbohydrates but also from fat and albumin. And when this saccharificating ferment predominates, it will form sugar from the fats and albumins which are not decomposed properly by their respective ferments. The other two ferments are called by Menyhert the balancing or the equilibrium ferments to the diastatic ferment.

In the healthy organism the diastatic ferment is secreted in such quantity that it works harmoniously in coöperation with the other two, thereby maintaining constantly a physiological equilibrium. A diabetic who has passed through the stages of polydipsia, polyuria, and polyphagia, and who metabolizes sufficient to maintain a certain reduced body weight, is said to be in a pathological equilibrium. This patient must again be brought back into a physiological equilibrium and maintained as such. There is in his case a disturbance in the balance. The equilibrium is broken. The sacchari-

ficating ferment predominates. If the pancreas be removed or destroyed, you get a glycosuria with the identical symptoms mentioned above. The fats pass away as neutral fat; a large proportion of the carbohydrates passes through unconverted, and about one-third of the protein is lost. You will find less sugar in the intestinal tract because we have removed the diastatic ferment necessary to convert the 20 per cent to 40 per cent of the carbohydrate lost; and as the lipolytic and proteolytic ferments have also been removed, there remains in the organism a prevalence of the saccharificating ferment. We have removed the two ferments secreted by the pancreas which equalize the production of the diastatic ferment secreted by the various glands of the entire organism. They act somewhat like a "hormone;" they check the sugar factory.

Acetone Bodies.—The alkalies in the intestinal tract are utilized to neutralize the acidity of the chyme, to facilitate the action of the intestinal ferments. Menyhert believes that all fats should be saponified before absorption. When there is a lack of alkali, the fatty acids resulting from the splitting up of the fats are absorbed as such, get into the circulation and undergo further splitting, forming the acetone bodies; or if there is a deficiency of the lipolytic ferment the fats are absorbed as emulsified and neutral fats, and undergo the same changes in the intermediary chemical processes. To avoid this the organism must be thoroughly alkaline. The tissues of a diabetic are variously less alkaline than normal, according to the severity of the case. Von Noorden in his "Latest Aspects" now recommends the alkalies in the semisevere cases. Baum also says as long as your patient is thoroughly alkaline you need have no fear of acetone. Menyhert has always said the tissues of every diabetic must be alkalized.

Summary.—The cause of diabetes mellitus, in accordance with the above theory, may be said to be a disturbance from the normal in the percentage of the secretion of the three ferments—the saccharificating ferment preponderating. The seat of this begins in the intestinal tract and is carried forward into the intermediary chemical processes. This disturbance may be caused by a pathological change in the nerves governing the secretion of the ferments or in the gland itself. Seventy per cent of all cases on autopsy (Hauseman) show pathological change in the pancreas, in consequence of which there is an overproduction of sugar which the liver and muscles are unable to store, and sugar formation is excited also in the liver and elsewhere. The absence of sufficient alkali in the intestinal tract prevents the saponification of the fatty acids, which are absorbed as such, eventually leading to acidosis. The chyme may not be entirely neutralized and acid peptones absorbed. All diabetics who have died in coma have shown on autopsy an extremely acid reaction of the intestinal contents and of the chyle in the thoracic duct. The tissues have also been found saturated with acids.

TREATMENT.

I. *Dietetic:* The diet in each case must be individualized according to its classification, whether mild, semisevere, or severe. Menyhert does not feed by calories; he deems it unnecessary. He allows the patient to eat what he orders for him until satisfied. He keeps track of his weight, watches the progress of the case, and increases the diet if necessary. The portions ordered vary from 200 to 300 gm. each, depending on the quality. This is done in order to enable the kitchen to estimate the required amounts needed *pro die* for the several patients. Vegetables are used in large amounts. Meats, fish, cheese, wine, and eggs are all on the diet list. The yolks of eggs only are utilized in severe cases. Fats are restricted in severe cases. Menyhert refutes the claim that the carbohydrate molecule is necessary to burn up the fatty acids and so prevent the acetone bodies. He has kept patients four to five months without carbohydrates and brought them back into a physiological equilibrium. Acetone may appear or increase, but sooner or later disappears. The carnivorous ani-

mals do not require it, neither do the inhabitants of the polar regions. The diet, of course, must be varied to meet conditions.

II. *Medical:* Organotherapy has been tried for many years by various workers. Back in 1896, v. Ketly and Hasenfeld tried enemas prepared from the pancreas. Oliver tried the suprarenal extract. Calves' liver has been tried. Von Noorden used extract of entire pancreas. Following Cohnheim's experiment, the writer tried extract pancreas and muscle juice given alternately, without result. The error has been, Menyhert says, in giving the three ferments when only one or two were essential. The diastatic ferment should have been eliminated. So Menyhert separates the three ferments. He uses only the proteolytic and the lipolytic, as the case may be, the two balancing or equalizing ferments to the diastatic ferment—those which preserve the harmony in the action of the three. It is an easy matter to determine what we consider a subnormal quantity of the ferments of the stomach, in which case we do not starve our patient—we merely supply what is wanted. In the case of the pancreatic juice we have no way of determining the efficiency of each ferment. We must be guided by the results of our treatment. As a proteolytic ferment Menyhert uses papain (carica papaya) in pills, each containing 0.3 gm., keratin-coated; for his lipolytic ferment, steapsin is used in 0.3-gm. pills, keratin-coated; and for his alkali, sodium bicarbonate in 0.5-gm. pills, keratin-coated. They are given in this form in order that they may pass through the stomach unaltered and disintegrate in the intestinal tract, where nature intended they should be. Bicarbonate of soda, when given per os, injures the various functions of the stomach and disturbs general nutrition. He takes advantage, in severe cases, of the frequent urination at night and administers large doses per os six hours after the evening meal in order to obtain rapid alkalinity of the patient. The urine and feces are the guides; they must be alkaline to litmus. About 20 to 25 grammes of the alkali is given per day. A few grains are given every half-hour. The soda is reduced or increased as required. Very often 6, 10, or 15 doses a day are sufficient. The papain is given three times a day, one hour before meals, in doses of 3 to 6 or 8 to 12 a day, as the case may demand.

The lipolytic ferment is usually given when an increased amount of fat is prescribed in the absence of acidosis. One or two doses a day are given for a short time and then discontinued.

The remedies in each case must be individualized. Mineral waters are forbidden; they are usually alkaline and cathartic. Diarrhea must be checked. One movement a day is recommended. Opiates may be used to check the bowels if necessary. Occasionally edema appears on the extremities. Then the alkali is reduced in quantity or left off entirely for a day, and a large dose of sulphate of magnesia on an empty stomach administered, when immediate results follow. Complications are treated as they appear.

Experiments on Animals. — Menyhert carried on a number of experiments on animals in the physiological institute, his latest successful one being on a dog. The pancreas was removed and the dog kept alive for eight months with his therapy. It was finally killed before a commission of scientific men to demonstrate the success of his experiment. I saw the records of this experiment, which are on file in the Physiological Institute at Budapest. The fact that a pancreatic diabetes was produced in an animal, and the severest cases of diabetes in man respond to the same treatment, was proof positive to Menyhert that his theory was a correct one.

Laboratory Equipment.—All the laboratory apparatus necessary are a few test-tubes; reagents for sugar, albumin, acetone, and diacetic acid; a polariscope; a fermentation tube which can also be used for quantitative estimation (I use the Ivar Bang titration method also for quantitative analysis); and a hydrometer. Menyhert makes no quantitative estimation of acetone, and no ammonia or nitrogen estimates. With a

little experience one is able to determine an increase or decrease in the acetone bodies.

Clinical Cases.—I could cite a great number of cases taken from the clinic records, but prefer giving only a few from personal observation.

Case 1.—Woman forty-three years old. Treated from February 8, 1911, to March 8, 1911. At that time her urine showed 6.1 per cent sugar, sp. gr. 1032, acet. +, diacet. 0. She left the clinic sugar-free, having gained 7 kilos. Her diet at that time was as follows: 200 gm. veal; 300 gm. assorted vegetables; 400 gm. cauliflower; 1 sardine; 2 eggs; 250 gm. salad; 250 gm. soup; 300 gm. coffee; 800 gm. red wine; 900 gm. tea; 100 gm. water. Urine: quantity 2000, sp. gr. 1010.

Not keeping up her restricted diet nor continuing the ferment, she returned October 15, 1912: Urine: 5600 Cc., acid reaction, sp. gr. 1034, sugar 6.6 per cent, acet. +, diacet. +. Weight 57.6 kilos.

Diet ordered: Black coffee + 2 yolks; omelette with mushrooms; cauliflower soup; roast veal; salad; endives; cabbage; wine soup; veal cutlet; some aleuronat bread.

The carbohydrate in this case was not taken away suddenly, as Menyhert said she had been eating so much he preferred waiting a few days.

She also took 6 protein ferment pills per day and 30 alkali pills. At night, six hours after the evening meal, 1 teaspoonful bicarb. soda per os.

October 16. Urine 4500, acid, sp. gr. 1038, sugar 4.9 per cent; acet. + +, diacet. + +. Diet: Tea; fish; cauliflower; spinach; vegetable pudding; wine soup; cabbage cooked; some aleuronat bread. Medicines same.

October 17. Urine 2700, acid. sp. gr. 1032, sugar 2.7 per cent; acet. +, diacet. +. Same diet continued.

October 18. Urine acid, 2600, sp. gr. 1031, sugar 2.2 per cent, acet. +, diacet. +, both diminished. Diet: Coffee and yolk of eggs; cauliflower soup; cooked kraut; wine soup; cabbage; cheese and dill pickle.

October 19. Urine 3000, acid, sp. gr. 1029, sugar 2½ per cent, acet. +, diacet. +. Diet: Coffee with yolks; cauliflower purèe; fish-egg soup; vegetables; dill pickle; fish; vegetable pudding.

October 20. Urine 3400, amphoteric, sp. gr. 1027, sugar 1.8 per cent, acet. 1, diacet. 0. Diet: Coffee with yolks; crab paste; dill pickle; cauliflower soup; omelette (made with yolks and a little cream); champignons; vegetable pudding and stewed kraut; coffee melange; cabbage au gratin.

October 21. Urine alkaline 2600, sp. gr. 1032, sugar 3.2 per cent, acet. 1, diacet. 1. Diet: Coffee with yolks; cauliflower purèe; bouillon with egg; vegetable pudding; calves' lung hash; salad with lemon; crab; kraut au gratin. Weight 59.7 kilos.

October 21. Urine 3000, alkaline, sp. gr. 1028, sugar 1.7 per cent, acet. 1, diacet. 1. Diet: Tea and lemon; hard yolks; cauliflower; fish-egg soup; + 2 yolks; vegetable pudding; stewed kraut; wine soup; boiled cabbage au gratin.

October 23. Urine 2000, alkaline, sp. gr. 1032, acet. 1, diacet. 1, sugar 1.7 per cent. Diet: Bouillon day; every two hours, alternating with vegetables.

October 24. Urine amphoteric, 1800, sp. gr. 1027, sugar 1.7 per cent, acet. +, diacet. +. Weight 59.7 kilos. Diet: Coffee + yolks; smoked eel and lettuce; bouillon with cauliflower; vegetable pudding; stewed kraut; wine soup; cabbage au gratin.

October 25. Urine alkaline, 2000, sp. gr. 1020, sugar 0.8 per cent, acet. 1, diacet. 1. Diet: Tea with lemon; 2 hard yolks; sour vegetables with yolks; bouillon; cauliflower; stewed kraut; cabbage au gratin; vegetable pudding; yolks of egg with mushrooms.

October 26. Urine 2000, alkaline, sp. gr. 1028, acet. +, diacet. +, sugar 1.3 per cent. Diet: Bouillon day; champagne without sugar.

October 27. Urine alkaline, 2000, sp. gr. 1028, sugar 1.0 per cent, acet. +, diacet. +. Diet: Coffee with yolks; sea-fish roast with lemon; bouillon with egg; pudding, vegetable; sour vegetable stewed; Brussels sprouts; cauliflower pudding.

October 28. Urine alkaline, 2800, sp. gr. 1020, sugar 0.5 per cent, acet. +, diacet. +. Diet: Bouillon + vegetable day; coffee + yolks.

October 29. Urine alkaline, 2000, sp. gr. 1027, sugar 0.9 per cent, acet. 1, diacet. 1. Diet: Bouillon day.

October 30. Urine 3000, alkaline, sp. gr. 1015, acet. 1, diacet. 1, sugar 0.2 per cent. Diet: Coffee; cauliflower; bouillon and yolks; asparagus; cold slaw; vegetables with 2 yolks; wine soup; half roast partridge; dill pickle.

October 31. Urine 2100, alkaline, sp. gr. 1018, acet. slight, diacet. slight, sugar 0.3 per cent.

As I left Budapest soon after, I could not follow this case further. I give it to show the results obtained in two weeks.

Case 2.—Girl of seventeen years. Sick for two years. One brother died of diabetes at age of thirty-two. One sister has bone tuberculosis. This girl has been on empirical diet for ten days.

October 9. Sp. gr. urine 1030, reaction acid, sugar 2.8 per cent, acet. + +, diacet. + +. Left apex suspicious. Slight fever. She was started on 50 soda pills a day and 2 teaspoonfuls of bicarb. soda six hours after evening meal. Diet: Caffeine-free coffee with yolks; vegetable pudding; tomato soup; cabbage; lean fish broiled; wine soup; boiled kraut.

October 10. Urine alkaline, 2500, sugar 1.2 per cent, sp. gr. 1020, acet. + +, diacet. + +. Weight 43.3 kilos. Diet: Coffee + yolks; soup + greens + yolks; kraut with curried ham; cauliflower; cheese; fish with dill pickle; vegetable pudding with tomato sauce.

October 11. Urine 2000, sp. gr. 1026, alkaline, sugar 3 per cent, acet. + +, diacet. + +. Weight 42.5 kilos. Diet: Coffee; hard yolks; broiled steak; spinach; vegetable pudding; wine soup; sour spinach; 2 yolks; sorrel; wine.

October 12. Urine 1400, alkaline, sp. gr. 1029, sugar 2.1 per cent, acet. +, diacet. 1, both much less. Soda pills 50 + 20 ozs. soda at night; 6 papain pills a day. Weight 43.30 kilos. Diet: Coffee with non-saccharin. milk; fish gelée with lemon; fish-egg soup with yolks; hashed veal; dill pickle; vegetable pudding; Edam cheese; wine soup + tropon; broiled fish; cabbage au gratin.

October 13. Urine alkaline, 2000, sp. gr. 1028, sugar 2.1 per cent, acet. 1, diacet. 1, both slight. Weight 42.8 kilos. Diet: Bouillon day.

October 14. Urine 2000, alkaline, sp. gr. 1022, acet. 1, diacet. 1, sugar 0. Temperature 38.3°. Weight 42.10 kilos. T. B. in both apices by *x*-ray; tubercle bacilli in sputum. Diet: Coffee with sugar-free milk; 2 yolks; kefir No. 2; beef bouillon + 2 yolks; curried ham; stewed kraut; cauliflower; Edam cheese; radish; mushrooms with 2 or 3 hard yolks; cauliflower with ham.

October 15. Urine alkaline, 2200, sp. gr. 1023, acet. 1, diacet. 1, sugar 1.2 per cent. Diet: Coffee + 2 yolks; cauliflower; fish-egg soup; vegetable pudding; kraut; Edam cheese; radish; wine soup; asparagus au gratin.

October 16. Urine 2200, alkaline, sp. gr. 1028, sugar 1.5 per cent, acet. 1, diacet. 1. Diet: Same as day before, with milk and kefir.

October 17. Urine 2000, alkaline, sp. gr. 1018, sugar 2.2 per cent, acet. +, diacet. +. Diet: Bouillon day.

October 18. Urine alkaline, 2000, sp. gr. 1025, acet. +, diacet. +, sugar 1.4 per cent. Diet: Same.

October 19. Urine 2000, alkaline, sp. gr. 1017, acet. 1, diacet. 1, sugar 2.1 per cent. Papain increased to 8 a day. Diet: Coffee with yolk; cauliflower; fish-egg soup; vegetables, green; dill pickle; thymus; fish; vegetable pudding; red wine, sugarless.

October 20. Urine alkaline, 2100, sp. gr. 1018, sugar 1.0 per cent, acet. slight, diacet. trace. Diet: Vegetable day.

October 21. Urine alkaline, 2300, sp. gr. 1019, acetone trace, diacet. 0, sugar 0.9 per cent. Diet: Coffee with yolk; crab; dill

pickle; cauliflower soup; omelette with mushrooms; pudding and kraut; cabbage cooked au gratin.

October 22. Urine alkaline, 1800, sp. gr. 1015, acet. trace, diacet. trace, sugar 0.2 per cent. Temperature 37.1°. Diet same as on previous day.

October 23. Urine 2100, alkaline, sp. gr. 1018, acet. trace, diacet. trace, sugar 0.6 per cent. Diet: Tea; tropon; 2 yolks; cauliflower; egg and vegetable bouillon; wine soup; kraut au gratin.

October 24. Urine alkaline, 2100, sp. gr. 1014, acet. trace, diacet. trace, sugar 0. Temperature 38°. Weight 43.10 kilos. Diet: Bouillon + 2 yolks; eel; lettuce; cauliflower; vegetable pudding; stewed kraut; coffee; wine soup; kraut au gratin.

October 25. Urine alkaline, 2000, sp. gr. 1014, acet. 1, diacet. 1, sugar 0.2 per cent. Diet: Tea; 2 hard yolks; sour vegetables with yolks; bouillon; stewed kraut; stewed cabbage au gratin; pudding; mushrooms.

October 26. Urine 2100, sp. gr. 1015, acet. 1, diacet. 1, sugar 0.2 per cent. Diet: Bouillon day; sugarless champagne.

October 27. Urine 2000, alkaline, sp. gr. 1015, acet. +, diacet. +, sugar 0.2 per cent. Diet: Coffee with yolks and bouillon + yolks balance day.

October 28. Urine alkaline, 2100, sp. gr. 1016, acet. +, diacet. 1, sugar 0.3 per cent. Diet: Bouillon day.

October 29. Urine alkaline, 2100, sp. gr. 1014, acet. 0, diacet. 0, sugar 0. Weight 43.40 kilos. Diet: Vegetable day.

October 30. Urine alkaline, 2200, sp. gr. 1014, acet. trace, diacet. 0, sugar 0. Diet: Vegetable day.

October 31. Urine alkaline, 2100, sp. gr. 1015, acet. 0, diacet. 0, sugar 0. Slight hemorrhage; otherwise feels very well.

Weight October 10, 43.30 kilos; on October 29, 43.4 kilos, in spite of the low caloric value of her diet. No carbohydrates were given and no fats, except what was present in the yolks of eggs. She said she did not feel starved, neither did she crave bread. These two cases I personally assisted in putting through.

Case 3.—Mrs. C., aged forty-eight. Diabetic for two years. Says her former physician reduced sugar only to one-half of 1 per cent. On her general diet, urine 3½ pints, sp. gr. 1036, acid, sugar 5.5 per cent, indican + + +.

July 16, 1913. 100 gms. bread was added to strict diet for the following day.

July 18. Urine acid, 28 ounces, sp. gr. 1027, sugar 3.0 per cent. She was given 10 soda pills a day; 6 papain, 2 pills t. i. d. A little soda per os was also taken late at night. She was kept on a strict diet with bread averaging between 1 to 2 ounces a day.

July 31. Urine alkaline, sp. gr. 1021, sugar 0, indican 0.

August 18. Urine alkaline, sp. gr. 1022, sugar 0. The papain pills were reduced to three a day; bread increased to 3 ounces a day.

September 10. Urine 3 pints, sp. gr. 1021, sugar 0. Patient discharged herself, as she said she was satisfied with her present diet. No papain had been taken for some time.

About the 15th of November patient met with an accident and fractured a knee-cap. An operation was necessary. The urine on examination was still found to be sugar-free. This is a mild case from my private practice, and is given merely to show how easily tolerance can be raised. In the severe cases the tolerance must be established very slowly and cautiously.

CONCLUSIONS.

1. The Menyhert ferment therapy has merit.

2. The Menyhert ferment therapy should be tried by every physician who fails with the empirical diet.

3. Every diabetic can be put back into a physiological equilibrium and maintained as such by the use of the ferments.

4. No diabetic should succumb to diabetic coma.

240 Stockton Street.

THE CURE AT VITTEL.[1]

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I hesitate very much to read a paper descriptive of a water cure before the College, and my only excuse is the fact that until a few months ago I personally knew nothing of Vittel and its waters, and have been unable to find a single Fellow who has any definite knowledge of the methods of their administration or of the extent to which they are resorted to by the people of France and the continent of Europe generally. I have derived personally such benefit from the cure, and have learned so much during my stay at Vittel, that I hope what I have to say may at least prove of some interest.

Vittel is in northeastern France, in the Vosges, in a wide valley with an elevation of eleven hundred feet, and surrounded by a charming and well-cultivated country. It is about three and a half miles from Contrexeville, and not very far from Martigny.

While there are numerous springs only two are utilized, the Grande Source and the Source Salee. These waters may be classed as mild alkaline, bicarbonated, sulphated waters, non-chloride bearing; the most pronounced characteristic being the almost total absence of chloride of sodium. Their mineralization is sufficient but not excessive, and they have not the inconvenience of waters highly charged with sulphate of lime, which is of doubtful value and difficult of digestion, nor the dangers of waters too strongly alkaline. The really active principles of the waters of Contrexeville, Martigny, and Vittel are the sulphates, carbonates, and chlorides of magnesia, soda and potash, and to some extent the bicarbonates, while the objectionable element in all is the sulphate of lime. For this reason the waters of Vittel, which contain less than one-third the amount of sulphate of lime that Contrexeville and Martigny do, are superior to either of them. They are readily absorbed and have not the tendency to liberate free carbonic acid, and can be used with great freedom as a table water. The absence of sodium chloride renders them of the greatest value in all kidney troubles, in arterial degeneration, as well as many diseases of the heart, and in all neurasthenias consequent upon toxemias of every sort.

The Vittel treatment is primarily that by diuresis. The average length of a cure is three weeks.

The waters when taken on an empty stomach pass quickly onward into the intestines, and absorption and subsequent elimination by the kidneys is very rapid. The quantity of urine passed is enormously increased, and the blood is thoroughly cleaned and its viscosity greatly diminished.

The doses of the waters required vary much in different individuals and diseases, and are always carefully, and in some cases minutely, graduated. In some conditions the water is administered on an empty stomach in the morning, in others a little before meal-times; the dose for the day is broken up, and the interval between the drinking of each fraction carefully prescribed. The commencing doses are always small, and increased little by little until the system becomes accustomed to the water. Generally the patient is instructed to walk slowly the whole time between each drink. In certain cases of vascular hypertension, movable kidney, and in certain other conditions, this is not permitted, and the best results are obtained if the water is taken while the patient is in bed.

The waters must always be taken under the direction of a physician, of whom there are sixteen at the Springs.

A careful history is first taken, and the weight, height, blood-pressure, and capillary reaction noted; and a twenty-four-hour specimen of urine is examined with the minutest care both chemically and microscopically.

[1]Read at the meeting of the College of Physicians of Philadelphia, February 4, 1914.

It will give a better idea of the cure if I describe my daily routine, which is that of the average patient who is gouty, with a tendency to renal calculi, and whose elimination is insufficient.

I was called at six in the morning, and dressed leisurely and got down to the spring at 6.40. For the first three days a half-glass of Grande Source water was drunk every twenty minutes until three doses were taken. This amount was gradually increased until I was drinking six full quarter-liter glasses of the water, one glass every fifteen minutes. During this time I was urged to keep on my feet, and to walk slowly up and down the esplanade and about the grounds, but not to walk rapidly enough to produce sweating. In this way I generally covered about three miles during the morning, sometimes more.

Every other morning, at 8.30, I was given massage under water. This is practiced at Aix and Vichy, and I presume at other cures. Some people are given this only twice a week, and on the other days hard, dry massage, with violent exercises. Massage of some sort is considered essential while taking the cure, as it stimulates all of the tissues to greater activity and aids materially in elimination. After the massage under water, which is simply massage and movements of all of the joints while a spray of hot water from the Grande Source is playing over the whole body, a douche is given, at first very hot and gradually becoming cold. You are then wrapped in a warmed linen gown, surrounded with blankets, and laid to rest in a side room for fifteen or twenty minutes. This does not produce much sweating, in fact almost none. You are then rubbed down with a fiber glove and a fiery mixture which looks like cream, but feels like tabasco sauce, and you are then as red as a lobster and feel wonderfully stimulated. This is not oleaginous, and you can immediately put on your clothes without soiling them in the least.

All this takes about an hour, and one is then quite ready for breakfast of toast and coffee. It is essential that no food whatever be taken until a full hour has elapsed after the last dose of water has been drunk.

Now comes a period of well-earned rest, occasionally as a nap, but generally spent in an easy chair with books and daily papers.

Luncheon was at one o'clock, the usual French breakfast with a fork, and consisted of eggs, cereal, vegetables, some light meat, and cheese. After a further rest, beginning at 3.30 in the afternoon, three more glasses of water were drunk, one every fifteen minutes, again walking and listening to the music of a very excellent band. After this a brisk walk was usually taken of several miles about the country or through some charming woods which are near.

Generally at five o'clock tea and toast were taken, and dinner at eight o'clock. For all Americans and English this afternoon tea is of real value, for the diet generally is light in character, and after so much exercise, if this is not taken, one is too hungry for dinner, and the tendency is to overeat at that meal.

All this seems a very simple and monotonous life, as indeed it was, but you are doing only that which every other person is doing, and the days pass very quickly.

For those who are energetic there are fine golf links, and good tennis courts, as well as fencing and other amusements in the casino; while at the height of the season there are horse races, aeroplane flying, and in the evening a good theater and moving picture shows.

The water of the Grande Source is particularly useful in all troubles arising from uric acid and its allies, such as gout, the gouty state, gravel, arthritis, certain albuminurias, nephritis, cystitis, prostatitis, some of the eczemas, neuritis, neurasthenias of toxic origin, colitis, and certain dyspepsias.

The water of the Source Salee is richer in magnesium salts, and is particularly useful in liver troubles, malaria, Malta fever, alcoholic excesses, and overeating. By relieving the catarrh and the congestion of

the bile-ducts it is of value in cases of biliary calculi. Certain forms of diabetes of hepatic or pancreatic origin are said to be much improved by its use, and the claim is also made that great improvement follows its use in cases of chronic bronchitis.

Dr. Johnston-Lavis, the one English physician at Vittel, to whom I was directed and who prescribed my treatment, showed me the greatest courtesy and kindness. He told me that in certain juvenile epilepsies, particularly in those with digestive disturbance and faulty elimination, the use of the waters was of the greatest value in diminishing the number of seizures, and in a few cases seemed to be of lasting benefit.

My own experience in the use of these waters would lead me to believe their greatest efficacy is in cases of excessive uric acid and other waste products or toxemias and renal calculosis.

Its action in lowering blood-pressure is most marked, by diminishing the viscosity of the blood. In the first stage of arteriosclerosis, in which the arteries are kept in a state of spasmodic contraction and consequent high tension from the circulation within them of blood loaded with toxins, the results are very pronounced. My own blood-pressure was lowered ten points in the course of a week, although at no time was it high. Its action upon the high blood-pressure of several people whom I met there was very striking.

A carefully selected diet list is given to you, and must be adhered to closely. This consists of a reasonable amount of meat, not to exceed five ounces per day, but beef and mutton were given not oftener than twice a week; poultry of all sorts, but the greasy kinds, such as goose and duck, in very limited quantities; game occasionally if fresh; fish, except coarse kinds; while eggs, milk, cream, fresh butter, healthy cheeses, junket, and soured milk were freely permitted. Vegetables of all sorts, except rhubarb, sorrel, spinach, French beans, and strawberries were given; while ripe grapes, apples, pears, and oranges were allowed. Bread and toast were allowed, but only in limited quantities; coffee once a day, and tea once a day. No alcohol was permitted, but at times patients are allowed to take a small quantity of dry light white wine, or one and a half ounces of Scotch whisky well diluted.

All heavy gravies, strong meat soups, potted and preserved meats and fish, and highly seasoned dishes were prohibited. High game, rotten cheeses, rich and greasy pastry, much sweets, chocolates, hot condiments, and cocoa were not allowed, and malt liquors never permitted.

At all of the hotels, which are very comfortable and well kept, two bills of fare are provided—one that of the Régime, which is under the supervision of the physicians practicing at Vittel, from which your own special diet can be selected (all articles in this list contain very little salt); and the other for persons not taking the cure. One can easily get to the point where boiled eggs can be eaten and enjoyed without salt. The diet is quite a liberal one, but is so arranged that the amounts of the various articles are small, and one underfeeds rather than overfeeds. The waters tend to diminish the appetite, and by the end of the cure food is almost distasteful. One feels quite water-logged, and I think another week would have upset my digestion completely.

The action of the waters is very rapid, as after drinking four or five glasses one's circulation feels full, the head is congested, sometimes there is slight dizziness, but in the course of a few minutes the kidneys begin to act, and for two or three hours the amount of urine passed is tremendous. The bladder must be emptied every ten or fifteen minutes of absolutely colorless urine, but during the remainder of the day urination is less frequent, although the amount passed is large.

The hydropathic establishment is most complete and modern in every particular, with every known kind of bath to be administered in selected cases, while Zander apparatus of every description is provided for those who will not or cannot voluntarily walk and take reasonable exercise.

Massage and Swedish movements are given by experts, and various kinds of electrical apparatus, including a most up-to-date Roentgen-ray machine, are there for the purposes of diagnosis and treatment.

I believe that a course of the waters at Vittel for properly selected cases will more than compensate any one suffering from gout and the toxemias of the gouty state, as well as renal calculi, for the trouble and expense of the journey and treatment while there. I am firmly convinced that this method of diuresis by drinking large quantities of this moderately mineralized sodium-chloride-free water is far superior to the treatment by baths, sweating, and the drinking of actively purgative and highly mineralized waters, so frequently employed in these conditions.

While limiting the salt intake we can cut down the average daily elimination of the twelve grammes of sodium chloride to about six grammes, and thus allow the kidneys to do a lot of work which they could not otherwise perform.

One must be prepared to give up three full weeks to the cure and to attempt no active mental or physical work during the time the waters are being drunk, as the treatment is distinctly exhausting, and an after-cure in some high, bracing climate is advisable before returning to the daily routine of work at home.

I believe that great good can be accomplished by taking the bottled waters here at home, but it is next to impossible for a man to expect to derive much benefit if he carries on his ordinary daily duties. It can only be of value if he will devote his whole time to it.

There is, I believe, some very distinct radioactivity in the waters as they come direct from the springs, some of which is lost when the waters are bottled and transported for long distances.

It is for these reasons that all who need this treatment should go to Vittel and take the cure, although I have been employing the waters here during the past few months with increasing good effect.

The contraindications to this method of treatment are very low blood-pressure, grave valvular cardiac disease, as well as cases of profound anemias.

A physician properly introduced is treated by the management of the establishment with the greatest possible courtesy, and everything will be done to make his stay at Vittel pleasant and profitable.

I was given complimentary tickets for the waters, baths, massage, the casino and the theater, and afforded every opportunity to inspect the hydropathic establishment and to learn the details of the various methods of treatment employed.

There is the most modern and up-to-date establishment for the bottling and shipping of the waters I have ever seen. The greatest care is exercised to use new, sterilized bottles and stoppers; every procedure in the process of handling the waters and bottles is done by machinery of the most approved pattern. Over ten million bottles of the waters were shipped from the Springs during the past year.

The total number of persons registered at the Bureau as having taken the cure this past summer, up to the time that I left there, was nine thousand four hundred and eighty.

ANALYSIS OF THE MINERAL WATERS OF VITTEL.

Grande Source (diuretic).	Grammes.
Carbonic acid, free	0.0475
Carbonic acid, combined	0.3070
Bicarbonate of lime	0.2994
Bicarbonate of magnesia	0.0392
Bicarbonate of iron	0.0032
Sulphate of lime	0.6288
Sulphate of magnesia	0.1923
Sulphate of lithia	0.0004,8
Chloride of soda	0.0076
Chloride of potash	0.0004
Silicate of soda	0.0156
Phosphoric acid, Fluorin, Alum, Magnesia	Traces
Organic matters	0.0205,2
Residue at 170° C.	1.2025

Source Salee (laxative).	Grammes.
Carbonic acid, free	0.0585
Carbonic acid, combined	0.4200
Carbonate of lime	0.3230
Carbonate of magnesia	0.1294

Source Salee (laxative).	Grammes.
Carbonate of iron	0.0003
Sulphate of lime	1.6178
Sulphate of magnesia	0.5805
Sulphate of lithia	0.0007,9
Chloride of soda	0.0077
Chloride of potash	0.0058
Silicate of soda	0.0307
Phosphoric acid, Lithia, Alum, Magnesia	Traces
Organic matters	0.0300,1
Residue at 170° C.	2.7260

INDICATIONS FOR AND RELATIVE VALUES OF TONSILLOTOMY AND TONSILLECTOMY.

GOODALE, in the *Boston Medical and Surgical Journal* of October 2, 1913, asserts it has not been demonstrated that complete removal of the tonsils is followed by harmful effect upon the general system.

Tonsillotomy involves usually less trauma than does tonsillectomy, but in the latter the method of removal is of primary importance, a sharp dissection down to the tonsillar artery, with snaring of the vessels, giving the least amount of inflammatory reaction.

Of the two operations, tonsillectomy shows a larger percentage of septic complications, due to the greater trauma usually occasioned, and also to the relatively large number of septic conditions in which of late years an operation is undertaken.

The relative frequency of postoperative hemorrhage is not definitely established, but in view of the available methods of treatment it is no longer a serious complication if dependent upon local causes.

While gross deformities of the parts involved are not likely to follow tonsillotomy, yet cicatricial occlusion of the lacunar orifices is frequent, and may lead to an intensification of the original chronic inflammation. Tonsillectomy in unskilled hands may be followed by marked and injurious distortion, but with good technique should have no other alteration than an approximation and occasionally a partial fusion of the pillars.

The indications for operation should be determined by the pathological changes of the tonsils, which are actually a detriment to the individual.

Simple hyperplasia, if obstructive or favoring catarrhal conditions, and if persistent, may be sufficiently treated by a tonsillotomy, especially in children.

The systemic ill effects of chronic tonsillitis may be increased by a tonsillotomy. Complete removal is here preferable to a partial one, although mild cases of chronic inflammation may be sufficiently relieved by appropriate treatment without excision.

Infection of the fauces due to virulent microörganisms may not be prevented by removal of the tonsils.

Recurrent local infections or general infections having their origin in the tonsils require tonsillectomy as soon as a favorable moment for operating arrives. Tonsillotomy may be expected here to prove inadequate.

Recurrent acute catarrhal infections of the throat require complete removal of the tonsils if these show chronic inflammation, although immunity against subsequent attacks is not necessarily secured.

Local tuberculosis of the tonsil requires complete removal of the organs.

In young children with adenoid enlargement requiring removal, the tonsils should not be excised unless demonstrably causing injury or favoring attacks of acute middle-ear inflammation.

If an impairment of the speaking voice is dependent upon tonsillar disturbances, these may be corrected according to the principles already given, and if a tonsillectomy is indicated, it may with proper technique be performed without anxiety.

In singers slight alteration in the tension of the palatal muscles may influence the voice either favorably or unfavorably. In the case of beginners with harmful alterations of the tonsils a partial or complete removal may usually be done, if the local or general welfare of the patient demands it. With increasing length of singing experience a correspondingly conservative attitude should be maintained, particularly in respect to truly fine voices.

EDITORIAL.

THE INFLUENCE OF CERTAIN DRUGS ON PHAGOCYTOSIS.

Readers of the THERAPEUTIC GAZETTE will remember that we called attention some years ago to several researches which indicated that moderate doses of quinine distinctly increase phagocytosis, one of the measures instituted by the body to protect itself from infectious disease. A considerable amount of work has been done on this subject, however, since that time. It is a large field for research, which deserves to be thoroughly investigated, since it seems very likely that such investigations will reveal the fact that many drugs which do good without our being able to offer an adequate explanation therefor do so by influences exerted upon phagocytosis or other protective processes.

For these reasons we have read with much interest a communication in the *Journal of Infectious Diseases* for November, 1913, by Arkin. He has studied the influence of strychnine, caffeine, chloral, antipyrin, cholesterol, and lactic acid on phagocytosis. Beginning his paper with quotations from some of the earlier communications on this subject, he points out that Hektoen and Rüdiger in 1905 showed that a large number of salts inhibited phagocytosis apparently by neutralizing or binding the opsonins so that they cannot act upon the bacteria. Eggers found that barium chloride has a marked toxic action on the leucocytes, and Hamburger has shown that calcium has a distinct stimulating action on the phagocytes for carbon particles. Thus a 0.005-per-cent solution causes a rise of phagocytosis amounting to 22 per cent. Other work has been done by certain investigators on the action of radium upon this function. Thus, Klecki found that radium emanations have a different effect on the phagocytosis of different bacteria, increasing it in the case of the colon bacillus and the staphylococcus, and diminishing it in the case of the tubercle bacillus, the increase on the phagocytosis seemingly being due to an action on the phagocytes rather than on the bacteria themselves.

Concerning drugs which are commonly used we not only have had the researches of Mainwaring and Ruh and Wilson upon quinine, but have had a confirmatory investigation by Grünspan, who has shown that quinine in the strength of 0.002 per cent is stimulating in effect; whereas Reynolds has shown that morphine has a depressing action. A number of investigators have shown that ether and chloroform diminish phagocytosis. It is very interesting to note that certain drugs which are commonly used in the presence of infection seem to have but little power over this function. Thus, Kentzler and Bentczur have shown that antipyrin, phenacetine, and sodium salicylate have practically no effect. He used quinine in typhoid fever, antipyrin in influenza, phenacetine in parametritis, pyramidon in pneumonia, and sodium salicylate in tonsillitis.

Arkin, in studying strychnine, found that strychnine sulphate or nitrate has, *in vitro*, a stimulating action on the phagocytosis of the streptococcus in the presence of human blood serum. He believes that the action is indirect in that it is probably on the opsonin of the serum rather than upon the phagocytes themselves. Strong solutions are capable of inhibiting phagocytosis. His results with morphine indicate that this drug has a depressant influence upon the phagocytosis of the streptococcus by human leucocytes up to 1/100 per cent, and to a slight extent up to 1/1000 per cent. So, too, he thinks that caffeine has a depressant effect only up to 1/10 per cent, and in dilutions greater than this, practically no action either on the phagocytosis or on the opsonins of the serum. This is particularly interesting, as he points out, because of the wide-spread use of preparations of caffeine as beverages, since alcohol commonly so used is a depressant, whereas the quan-

tities of caffeine usually taken are not depressant upon this important protective process. Chloral in a dilution of 1 to 5000 is distinctly inhibitive to phagocytosis, and this inhibition persists even when the solution is so weak as 1 to 50,000, which would seem to indicate that the chloral is not to be used carelessly in the presence of acute infections. Antipyrin has a slightly stimulating effect in dilutions of 1/10 to 1/50 per cent, but above this it has no effect. Finally, Arkin points out that nearly all, if not all, substances which have an inhibitory effect on oxidation also diminish phagocytosis.

THE VALUE OF STRYCHNINE IN CIRCULATORY FAILURE.

We presume that there are few in the medical profession who do not regard strychnine as a valuable medicament in conditions in which the circulation needs support, and we venture to say that a majority of practitioners depend largely upon this drug when they are called upon to combat weakness which seems to threaten the patient's existence. It is interesting to note in this connection that in the October issue of the *Quarterly Journal of Medicine* Parkinson and Rowlands report an investigation which they carried out at the London Hospital in an endeavor to determine just how valuable strychnine really is. Their observations were made upon patients who were lying quietly in bed, and records of the pulse, respiration, and blood-vessels were made at intervals of five and ten minutes as well as immediately before and immediately after the hypodermic injection of the drug. Five-minute observations in some cases were persisted in for one hour. The dose of strychnine was 1/15 of a grain—somewhat above the average. It is surprising to learn that in none of their cases did strychnine cause any increase in blood-pressure, nor did it cause an increase in pulse-rate or in the respirations, either as to amplitude or speed. Neither did they in any case note any improvement in the condition of the patient, although a few patients volunteered the information that they experienced a slight improvement. For these reasons these investigators announce their belief that the employment of strychnine as a rapidly-acting cardiac stimulant in cases of circulatory failure is futile.

Such an investigation as this is, of course, important and worthy of note, but before it is accepted to the extent of leading medical men to give up what they have come to believe a reliable measure, a much longer and more complete research is essential, and observations by others should be recorded. The history of therapeutics is full of instances in which drugs have obtained a reputation which in turn has been threatened by the discovery that they did not act in the manner which was generally thought adequate to explain their effects. Nevertheless it has nearly always been found that while the explanation of their action might be proved incorrect, the fact that they did good was not in the slightest degree threatened. An interesting illustration of this is met with in the case of alcohol. Thirty years ago it was universally considered to act as a stimulant, and when it was proved to be devoid of stimulant properties there were some who at once jumped to the conclusion that medical men in using it as a drug were not only mistaken in their ideas of how it did good but were also mistaken in their view that it did do good. Now we know that although alcohol does not act as a stimulant it seems to increase the activity of the protective processes of the body, and that in many cases of disease it is an advantage in that it restores circulatory equilibrium by dilating certain blood paths whereby ischemic areas become hyperemic, that it possesses antipyretic power, and that by being burnt up in the system during the course of fevers it aids in the support of the economy.

While it may be true, therefore, that Parkinson and Rowlands' observations are correct in themselves, it is not necessarily true that their conclusion, to the effect that strychnine is a useless drug in circulatory failure, is also correct, and we believe that

the results of large clinical experience should be adhered to until much more conclusive evidence is brought forward.

ETHER OIL ANESTHESIA.

Most medical men know that at various times in the past the suggestion has been made that surgical anesthesia be produced by the introduction into the rectum of warm ether vapor. Each time the proposition has been made it has been condemned both theoretically and practically, since it has been shown that it possesses no advantges over the older method of inhalation and often causes great irritation of the bowel. Recently Gwathmey, of New York, has brought forward a newer method of inducing surgical anesthesia by the rectal injection of ether and has published his results in the *New York Medical Journal* of December 6, 1913. His method is a very material modification of the one we have already referred to, and consists in mixing ether with olive oil in proportions varying from equal parts to 75 per cent of ether and 25 of oil. The oil protects the bowel or mucous membrane from the irritant effects of the ether, and he has found that olive oil is far better than any other oil for this purpose.

The patient who is to be anesthetized in this manner is prepared according to the usual method, care being taken, however, that great irritability of the bowel is not induced by the administration of a too active purge. The colon also should be thoroughly washed out until the return water is clear, and the patient should rest in bed for two hours or more before this preliminary treatment by irrigation is resorted to.

The only apparatus he employs consists of a small catheter with a funnel attached to it; two small rectal catheters inserted side by side to withdraw the fluid and irrigate the colon, and a towel which is placed over the face of the patient from time to time to prevent the dilution of the anesthetic in the air-passages as the drug is eliminated by the lungs. When the patient is satisfactorily anesthetized the towel is withdrawn. In adults he commonly employs two ounces of olive oil and six ounces of ether, the patient lying on the left side in the Sims position; a small catheter, well lubricated, is inserted three or four inches within the rectum, the funnel is attached, and the mixture poured in very slowly so that fully five minutes is expended before the injection is completed. Usually anesthesia develops in from five to twenty minutes, according to the susceptibility of the patient and the rapidity with which the injection has been given. Care must be taken that the respiratory passages of the patient are free and that breathing is properly performed with the head placed in the most advantageous position. Should any evidences of overetherization develop, as shown by signs of approaching cyanosis or embarrassed respiration, two to three ounces of the oil and ether mixture should be withdrawn by the small rectal tube, which has remained in the bowel or which can be again slipped into it. When the operator is through with his task the two small rectal tubes already mentioned are inserted as high up in the colon as possible and cold soap-suds water injected in one tube and drawn off from the other. After all the oil and ether has been abstracted in this manner 2 to 4 ounces of olive oil without ether should be introduced and the tubes withdrawn.

The advantages which Gwathmey claims for this method are that the patient has none of the disagreeable symptoms associated with inhaling this drug, that it is particularly useful in operations upon the face, neck, nose, mouth, or pharynx, and that it also is advantageous in those persons who have pulmonary diseases, as in consumptives or in those who have bronchitis and to whom an anesthetic must be given. Its contraindications are of course irritation and inflammation of the lower bowel, such as colitis, hemorrhoids, fistulæ, or malignant growth.

This method possesses certain advantages for a practitioner who has no assistant, but Gwathmey admits that in these

cases the full dose had better not be given by the rectum, but the physician should give a few inhalations of ether by the lungs as well in order to carry the patient completely into unconsciousness.

Gwathmey claims that by the use of olive oil none of the objections to this method of etherization which have hitherto held exist.

Doubtless ether and oil rectal anesthesia will take its place as one of the means by which the patient can be anesthetized under extraordinary conditions. That it will supplant the inhalation method which has been so long resorted to we believe to be exceedingly unlikely.

SPLENECTOMY.

The admirable results incident to splenectomy for conditions other than leukemia, in which case the mortality is absolute, the recent multiplication of operations and the general interest in the subject have resulted in a certain formulation of both indications and technique. Bland Sutton in his characteristic vivid style (*British Journal of Surgery*, October, 1913) remarks that his interest began when as a boy he watched a taxidermist skinning a bird, and was struck by the observation made by this artist, when he exhibited the milt or spleen, that dogs and men could live without it. He quotes Pliny's observation to the effect that the spleen is sometimes "a peculiar hindrance to runners, so that they burn it away from those runners who are incommoded by it." He holds that the following conditions justify removal of the spleen:

Injuries, such as rupture, stabs, gunshot wounds, and the like, which endanger life from hemorrhage. Enlargement and mobility which is dangerous in itself, and may interfere with other viscera. Malignancy, or cystic disease, of echinococcus or other origin. Large size (splenomegaly) associated with changes in the number, as well as in the relative proportion, of the blood corpuscles, such as exist in the conditions known as anemia and the conglomerate group covered by the term Banti's disease. Morbid conditions blood-borne, such as abscess due to the lodgment of septic emboli, tuberculosis, infarcts, and thrombosis of the splenic vein. Among exceptional conditions justifying removal of the spleen may be mentioned aneurism of the splenic artery. In the course of removing large perirenal tumors, also in performing gastrectomy, surgeons have found it necessary to remove the spleen when it has been implicated by the growth. Under such circumstances the splenectomy becomes an incident in an operation.

As to the movable or wandering spleen, at times most difficult of diagnosis because of the extent of this wandering, the condition is mainly confined to women who have had children. The spleen is usually a large one and ultimately tends to drop into the pelvis. It is a contractile organ and exhibits marked and transitory variations in size. Indeed, the swelling in its rapidity and extent may be extraordinary when the spleen is twisted on its pedicle. The latter may involve the tail of the pancreas, dragging it into the pelvis so that it may be included in the ligature previous to removal.

In many morbid conditions of the liver the spleen acts as a reservoir for the portal circulation. The slowness of the blood current through the organ favors the deposition of microörganisms as well as emboli and minute parasites. Abscess may be the result of such lodgment when the embolus is charged with streptococcus. The distinction from subphrenic abscess may be difficult or impossible.

Johnson has collected 113 cases in which the spleen has been removed for malarial hypertrophy. When this enlarged spleen is mobile it may be removed with a fair prospect of success. When it lies in its normal position or occupies the pelvis and is adherent the risks of splenectomy are enormously increased. Under the term splenomegaly are included a number of splenic enlargements accompanied by the disturbance of function, excited by causes at present unknown. Though red corpuscles are

formed in the spleen during fetal life, this office is transferred to the bone-marrow soon after birth. The spleen removes from the circulation broken-down red corpuscles, and products of their disintegration are conveyed to the portal circulation to be further elaborated. Perturbations in hepatic functions are noticed in association with increased size of the spleen, and such disturbances are sometimes manifested by jaundice. An enlarged spleen may be associated with opposite conditions of the blood such as erythremia and anemia. In erythremia the blood contains too many corpuscles, and in anemia too few. In erythremia, instead of five million red and six thousand white corpuscles per cubic millimeter, the numbers may run up to ten or even twelve million red and twenty-four thousand white corpuscles, with a large increase in the proportion of hemoglobin. The clinical features of erythremia are plethora, cyanosis, and splenomegaly. It is in all probability a primary disease of the red marrow, the splenic enlargement being due to increased functional activity, and also in part to engorgement owing to an increase in the total volume of the blood.

In leukemia associated with splenomegaly and changes in the bone-marrow and profound alterations in the number and physical condition of the corpuscular elements of the blood, the whites may even exceed the red corpuscles in number. The microscopic diagnosis of leukemia is a positive contraindication to splenectomy. Nor is a case of erythremia touched.

Enlarged spleen associated with anemia occurs in children and in adolescents. There is a slow progressive enlargement associated with a diminution in the number of the red and white corpuscles. In 1895 Sutton removed a big spleen from a girl five years old. She is now twenty-three and in perfect health. There is a form of splenomegaly accompanied by anemia (hemolytic anemia) and jaundice, but without bile in the urine. It is characterized by chronic jaundice, slight, unattended by icteric pruritus, xanthoma, or clubbing of the fingers; the feces are as a rule well colored, and the urine is nearly always free from bilirubin. The red cell is easily hemolyzed. Sutton has removed two spleens from such cases with successful results.

The leading features of the group known as Banti's disease are splenomegaly, reduction of the blood corpuscles, red and white, in the later stages cirrhosis of the liver, occasional jaundice and ascites. Banti's disease, especially in its later stages and when complicated by gastric hemorrhages, can scarcely be distinguished from thrombosis of the portal vein. Any disease which interferes with the portal vein causes enlargement of the spleen: for example, cirrhosis of the liver, gummata, and tumors. Obliterative thrombosis of the splenic vein leads to splenomegaly and hematemesis. A differential diagnosis may at times be impossible. A case is reported in point, that of a nurse twenty-six years old, who for six months suffered from recurring attacks of hematemesis associated with big spleen. Bleeding was so profuse that under some of the attacks the red corpuscles were reduced to 662,000 per cmm. Gradually the corpuscular elements would increase until they reached the proportion of 3,200,000 per cmm. This always indicated that hematemesis was imminent, and this invariably happened in a few days. The patient ultimately died of profuse hemorrhage. On autopsy the suspected gastric ulcer was not found, but the huge splenic vein was blocked by an organized thrombus at its junction with the superior mesenteric. There were no lesions in the stomach to account for the bleeding. It is obvious that the hematemesis in this and similar cases was due to engorgement of the gastric and esophageal veins, the consequence of obstruction to the splenic vein. This would have been relieved by removal of the spleen.

Kidd suggests that "splenectomy ought to be tried in all cases of cirrhosis of the liver with enlargement of the spleen."

If it be true that chronic engorgement of the spleen causes increased blood destruction and a toxemia that eventually

proves fatal, removal of the spleen is justified.

As to the technique of the operation, when the organ is of normal size and retains its proper relations with the stomach the vessels can easily be secured by transfixing the pedicle with a double ligature. With a huge spleen this is not safe. For such cases the left semilunar incision is advised. The lower pole is usually readily freed while the upper is held by the phrenocolic ligament and must be released to control the organ. This implies cautious division with the scissors of the peritoneal ligament, which retains the upper pole of the spleen to the diaphragm, thus allowing the organ to be withdrawn from the abdomen. Then the various branches of the artery are secured with hemostatic forceps and divided close to the spleen, in order to avoid injury to the stomach. After the spleen is detached, each branch of the artery is ligatured in turn.

The chief location of abnormality of the spleen relates to transposition of the viscera. The spleen is loyal to the stomach—*i.e.*, if the stomach be transposed the spleen will lie to the right. Multiple spleen is reported. Albrecht records the case of a man dead of nephritis who showed a multitude of minute spleens sprinkled through the peritoneum.

After splenectomy, patients as a rule suffer no more inconvenience than after ovariotomy, but in some instances they become very ill in a few days, the temperature rising to 101° and 103° at night, accompanied by loss of flesh and pain in the long bones. Associated with these changes there is a diminution in the red and an increase in the white corpuscles, and in a few cases temporary enlargement of the lymph glands. There is a gradual subsidence, the symptoms being attributed to slight infection about the stump.

Adolescents bear splenectomy better than adults. It is suggested that after splenectomy the bone-marrow takes on the function of the spleen pulp, and the lymph-glands act for the Malpighian bodies.

The organ may be regarded as an enormous lymph gland, and its ablation exercises no graver influence on the body than the excision of a crowd of enlarged lymph-nodes from the neck, axilla, or groin. The result of a statistical study has established the following facts:

The removal of the spleen in patients with leukemia is the most fatal operation in surgery. Probably no leukemic patient has recovered from this operation; death is due in most cases to uncontrollable bleeding or to shock.

Splenectomy for wandering spleen is accompanied by the same risks that beset an uncomplicated ovariotomy.

The removal of a malarial spleen is attended with a great risk, probably 30 per cent when the spleen lies in its normal position; but if free and mobile the risks approximate to those attending a straightforward ovariotomy.

The risks attending the removal of enlarged spleens in the category of splenomegaly associated with anemia are great; but the death-rate varies with the skill and experience of the operator.

When after careful choice of cases surgeons made splenectomy a success, pessimists admitted the surgical brilliancy of the results, but urged the importance of time to prove the ultimate success of such enterprises. Time has admirably vindicated the activity of the surgeon in regard to the spleen. It is encouraging to realize that, when patients recover from splenectomy, there is nothing in their condition to suggest that they are spleenless.

CHRONIC INTESTINAL STASIS.

This topic is a leading one of the day, since the sufferers from chronic intestinal stasis are usually neither well nor extremely ill. They exhibit as a rule a multiplicity of symptoms which we are in the habit of tracing to toxic absorption, and often in addition suffer from irregularly recurring and partially crippling intestinal pains. If they are living in a community blessed by active and enthusiastic surgeons

they have usually had their appendages removed and their gall-bladders at least drained. In their search for relief they try not only many systems, but many doctors. Although the total number of these patients is not large, they are so active in their pursuit of health and so clamorous over the failure of the varying methods adopted by various doctors that they keep constantly before the profession the underlying condition and justify the adoption of almost any measure which gives a reasonable guarantee of success. Sir Arbuthnot Lane (*British Medical Journal*, Nov. 1, 1913) is perhaps the most enthusiastic advocate of surgical intervention and has been most successful in the results attained thereby. As to the mechanical factors that bring about intestinal stasis he thus explains them: Owing to unsuitable diet in infancy and to the habitual assumption of the erect position, delay of fecal material takes place in the large bowel or cesspool of the gastro-intestinal tract, or, as it can be best described, the "general drainage system of the body." In consequence of this, new membranes or resistances to downward displacement are formed by the crystallization of lines of force upon the surface of the peritoneum along which strain is specially exerted.

The first membrane which usually forms is that fixing the large bowel on the left side to the pelvic brim. This tends to reduce the freedom of the passage of material through this section, and is a frequent seat of cancer later in life. Lane applied the term "the first and last kink" to the locality of this obstruction in the intestine, since it is usually the first to form, and it is the lowest obstruction that develops in the intestinal canal. This membrane frequently attaches the left ovary, and later may enclose it, rendering it cystic and producing an ovarian tumor.

Similar evolutionary membranes are developed on the surface of the peritoneum, which is reflected outward from the cecum, ascending and descending colon. These are much exaggerated at the splenic and hepatic flexures. Membranes develop also between the transverse colon when prolapsed, the adjacent ascending and descending portions of the large bowel transmitting through them much of its weight. The acquired membrane which runs outward and upward from the cecum may anchor the appendix at some point in its length, frequently producing a kink or obstruction of its lumen. In such circumstances inflammatory changes ensue, which are comprised under the term "appendicitis." Obstruction at any part of the large intestine may result in inflammatory or cancerous conditions.

The accumulation of material in a large prolapsed cecum may result in great delay in the evacuation of the contents of the ileum and considerable accumulation of material in the small bowel.

Or the obstruction of the ileum may be still further exaggerated in a more definite manner in two distinct ways, which may act separately or in association. If either affords a secure grip on the bowel the other is absent; but if one is only partially efficient both may be present, dividing between them the function of supporting the cecum directly and indirectly. Lane referred to the development of a membrane in the under surface of the mesentery attaching the small intestine at varying points on its surface and obstructing its lumen, producing what he called the "ileal kink." Or the end of the ileum may be controlled by a fixation of the appendix to the under surface of the mesentery of the ileum by acquired adhesions.

Both these developments are evolutionary, and are not inflammatory.

The accumulation of material in the small intestine drags upon and obstructs the duodeno-jejunal junction. In consequence, the duodenum is elongated and dilated, and especially in its first portion, where it is free and surrounded by peritoneum. Later the pylorus becomes spasmodically contracted because of the constant necessity of preventing regurgitation of the duodenal contents into the stomach. As a result the stomach becomes dilated by the accumulation of its contents.

The delay of the contents of the small

intestine, and also of the duodenum and stomach, results in their infection by organisms and in the development of chemical changes in the stagnating material.

These changes, in addition to the mechanical effects already described, bring about an engorgement of the mucous membrane of the first part of the duodenum, which may end in ulceration and perforation; or a similar change in the mucous membrane about the pylorus and along the lesser curvature of the stomach, which may terminate in ulceration, perforation, and later in cancer; or an infection of the ducts of the pancreas, which may produce degenerative inflammatory changes and their consequences. Later, cancerous changes may result in the damaged organ, or it may produce infection of the ducts of the liver and of the gall-bladder, which may determine the development of gall-stones, cholecystitis, and later cancer; or it may be the source of acute or chronic diseases of the liver.

This explanation, if one or two premises be granted, is entirely logical and consistent. The symptoms that result from the autointoxication of chronic intestinal stasis are loss of fat, wasting of the voluntary and involuntary muscles, degenerative changes in the skin associated with alterations in its texture and color, the development of pigmentation in certain localities, and a more or less offensive character of the perspiration; subnormal temperature, particularly in the extremities, and at times a bloodless condition quite akin to Raynaud's disease, an apathetic, stupid and depressed mentality, insomnia, failure to obtain rest from sleep even when it comes, neuralgia and neuritis and a general grouchy condition, wasting of the thyroid, degenerative changes in the breast, visceral prolapse, shortness of breath on exertion, frequently dilatation of the left heart and the aorta, Bright's disease, premature grayness and falling out of the hair, chronic pancreatitis, even pancreatic diabetes, cholecystitis and gall-stones, affections of the eye, pyorrhea alveolaris, tuberculous infection, rheumatoid arthritis, infection of the genito-urinary tract, Still's disease, pustular infections of the skin, mucous and ulcerative colitis, and ulcerative endocarditis.

The treatment other than operative of a defective drainage scheme consists in the use of paraffin before each meal. This makes the motion fluid and insures one or more evacuations daily. Its action as a lubricant is so remarkably efficient that it can meet many of the troubles that arise directly or indirectly from chronic intestinal stasis. Associated with the use of paraffin a spring support which presses on the abdomen below the umbilicus acts very effectually in stimulating the intestines to pass on their contents, in preventing the puddling in the ileum which produces distention of the duodenum and stomach, in keeping up the transverse colon, cecum, and other viscera which prolapse, and in exerting a constant pressure upon the veins in the splanchnic area, so preventing the accumulation of blood in this situation and keeping the brain well supplied.

Food likely to decompose and become poisonous if it is delayed in passage through the intestines, such as butcher's meat, should be taken in as small quantities as possible.

Should these measures fail to afford relief of the objective symptoms operation is indicated. At times the removal of the appendix or the cutting of the band may be serviceable, but unless the band be very limited the ileum should be divided and put into the pelvic colon, this being particularly true in women. If the colon be loose and pendulous it should be removed down to the junction. If the colon be fixed fairly high in the abdomen regurgitation is not very likely to take place. Lane's rule is to be satisfied with ileocolostomy if it is difficult to remove the large bowel, and to remove it if it can be done easily, thus making a practical and convenient rule. He regards gastroenterostomy for duodenal distention, even though there be ulceration, as both unnecessary and harmful, this operation only being performed for the relief of actual stricture; first, however, the ileal

effluent is freed by an ileocolostomy. If the stomach be much dilated, because of chronic spasm of the pylorus, to such an extent that, after gut short-circuiting, the spasm cannot be met by washing out the stomach for several days, he performs a gastroenterostomy. For ulceration of the stomach with no suspicion of cancerous infection, in addition to a gut short-circuit, with or without colectomy, Lane does a gastroenterostomy, in order to take the strain off the lesser curve by draining the stomach very effectually.

The only risk presented by the operation of short-circuiting and colectomy is that of adhesion of the intestines to one another, or to the abdominal wall, in such a manner as to produce a varying degree of obstruction. This is a risk common to all abdominal operations.

Lane exhibited some 17 cases. A spinster whose major symptoms were chronic constipation and profound asthenia, after diverse treatment including appendicostomy, had her large bowel removed to the splenic flexure in 1905. In 1906, because of dilatation of the stomach the pylorus was freed from the under surface of the liver. In 1907 a gastroenterostomy was performed. The same year the descending colon and the sigmoid were removed. At the time of reporting she was perfectly well and can play as many as five sets of tennis without undue fatigue, nor is she longer a source of trouble either to herself or her physicians. He narrates a case of operation for the relief of tuberculous disease of the hip with well-marked toxic signs. Ileocolostomy was performed, because of marked evidence of stasis in the abdomen. Improvement after the operation was rapid and continuous. His hip is now well and he has no pain or other disability.

Spinster, aged thirty-seven, had been constipated since birth. She had well-marked toxic symptoms, and was very pigmented. An ileocolostomy was performed in 1910. She is now working as a general servant.

Spinster of thirty-four, who had been subjected to laparotomy in 1904, and constipated since 1903, with no prominence of toxic symptoms, but complaining mainly because her bowels were opened only six times in five weeks. An ileocolostomy and colectomy was performed in 1909. Within three months of this operation she had two further operations to free adhesions. She had severe whooping-cough in 1910. The patient is now well and working as a hospital nurse. A woman of thirty gave the history of constipation ever since she could remember. Also she was treated at five different hospitals. Toxic signs and pigmentation were well marked. The operation of ileocolostomy was performed in May, 1911. Colectomy was performed in 1912, the patient having been found to have a colon full of hard masses. The patient gained 16 pounds, has her bowels move regularly, and feels more cheerful than for years. Moreover, her feet and hands are always warm.

A constipated spinster of twenty-four had severe abdominal pain, and rheumatoid arthritis of both knees which was getting worse, with slight toxic symptoms. Ileocolostomy was performed in 1911, there being well-marked kink of the ileum and appendix. The patient's general health is much better, though she still has some pain in the knees. She states, however, that the condition has definitely ceased to progress. Under these cheering influences her bowels are opened daily.

A spinster of thirty-four suffered from slight constipation for ten years, and from severe abdominal pain for the last year. Toxic signs were not well marked. Ileocolostomy was performed in March, 1911. In this year a further operation was performed and an adherent coil of small intestine freed. The patient looks and feels perfectly well and is without discomfort.

A boy of fifteen was always constipated and exhibited mild toxic symptoms. A delay of forty-eight hours was shown in the ileum. Masses of feces could be felt in the cecum and descending colon. The diagnosis was idiopathic dilatation of the colon. There was found on operation enormous distention of the large gut, together with a

marked ileal kink, and masses of evolutionary adhesions. Ileocolostomy was performed, and the patient made a rapid recovery.

A flatulent heart-burning male, twenty-two years old, constipated, suffering latterly from severe epigastric pain and distention and toxic signs, exhibited a large tuberculous tumor made up of a matting of his omentum and coils of intestine. The duodenum was dilated, and there was an ileal and duodenal kink. Ileocolostomy was performed, and within two weeks of the operation the mass in the abdomen was no longer palpable. The patient has remained perfectly well.

A patient of fifty-six, with a dilated stomach and tender ileum, exhibited the usual symptoms of pyloric obstruction. Operation showed old duodenal ulcer causing obstruction, and gastroenterostomy was performed; at the same time, as there was an extremely well-marked ileal kink, ileosigmoidostomy was done. The patient made an uninterrupted and complete convalescence.

A married woman of fifty-four who had been constipated for six years, and latterly with attacks of vomiting and severe pain in the abdomen, with well-marked toxic symptoms, was subjected to ileocolostomy in August, 1912. This operation produced an appearance suggesting a rejuvenescence of twenty years and made the woman able-bodied.

A tuberculous knee-joint is described as greatly bettered by ileocolostomy.

A spinster, twenty-eight years old, who began to suffer from pain and swelling in the joints from twelve years of age. She had chorea when she was six and again when she was seventeen. The arthritis spread to the large joints. She was subjected to many forms of treatment. Ten months ago her uterus was curetted. She was given a course of vaccines with staphylococcus aureus obtained from the urine. Thereafter followed a course of thyroid treatment. The patient exhibited considerable abdominal pain and vomiting, and had marked toxic symptoms. The finger-joints were stiff and in marked ulnar abduction, and the knees, elbows, and shoulders also were affected. Nor had she been able to sew for eighteen months. Pain in the joints lessened if no protein food was taken. *X*-rays showed a delay in the colon of over 104 hours. Ileocolostomy was performed in January, 1913. There was a marked ileal kink. As some regurgitation into the ileum occurred colectomy was performed on May 12, 1913. The patient was able to sew within three weeks of the ileocolostomy. She is reported as at present able to work and earn her living.

This report of Lane's is of peculiar value because it shows in the first place a considerable care in the selection of the cases which he regards as indicating an ileocolostomy; in the second place that even in his own hands this has often to be supplemented by other surgical procedures, and that the convalescence is neither uninterrupted nor assured.

The interest in Lane's communication is considerably enhanced by some remarks on chronic intestinal stasis by William Seaman Bainbridge (*ibid.*), who as the result of many visits to Lane's clinic expresses an enthusiastic appreciation of his pioneer work, masterly technique and careful study of his cases. He gives a statistical study of all cases operated on by Sir Arbuthnot Lane from Martha Ward at Guy's Hospital from May, 1909, to October, 1913. There were 54 short-circuits and 52 removals of colon. Of these, two cases of short-circuit were done for rheumatoid arthritis; one for trigeminal neuralgia; one for tuberculous hip. Three short-circuit cases returned with a diverticulum; three cases of removal of the colon were done on patients suffering from exophthalmic goitre; four from rheumatoid arthritis. After operations for removal of colon five cases returned suffering from adhesions and had further operations. After short-circuit operation eight patients returned and had removal of the colon.

As to the mortality, there were eight deaths. Four of malignant cases Bainbridge excludes—a moribund child, a case

of abortion with sepsis, and two malignant cases. He therefore records but four deaths in 106 operations.

He concludes his comments with the statement that the mortality in cases of intestinal stasis is astonishingly low; that there is very little if any risk with the present technique and that the much-feared excessive thirst and diarrhea have not been borne out in experience.

REPORTS ON THERAPEUTIC PROGRESS.

THE ADMINISTRATION OF TUBERCULIN BY THE GENERAL PRACTITIONER.

MYER SOLIS-COHEN, in the *New York Medical Record* of September 20, 1913, writes on a safe method of giving tuberculin. The main question is: Can tuberculin be given safely, so that it is not too dangerous in the hands of the careful and observant general practitioner who has had little or no personal experience with its use? He thinks at the present time it can be given fairly safely if the following rules are observed, and he is convinced that in a few years we will know how to give it even more safely:

The initial dose, however, must be minute—not the minute dose of the ordinary writer and manufacturer, but one-thousandth to one-millionth of their minute dose. No patient should be given over one-millionth of a milligramme (1:1,000,000 mg.) as an initial dose. Patients with fever should not begin on more than one-ten-millionth of a milligramme (1:10,000,000). When the disease is active the first dose should not exceed one-hundred-millionth of a milligramme (1:100,000,000 mg.). At the present time he advises against the general practitioner giving tuberculin to septic cases, with high afternoon fever and very rapid pulse after prolonged rest.

The next most important thing is to observe and question the patient closely for signs and symptoms of a reaction, both on the day tuberculin is given and on the succeeding day, and also during the intervening days until the next dose. Every patient on tuberculin should keep a temperature record. Reactions naturally vary in degree, but any of the following signs and symptoms occurring on the day tuberculin is given or on the following day are to be regarded as evidence of reaction, no matter what other explanation presents itself: Any rise of temperature above the curve of the previous few days, râles over the pulmonary lesion that were not present before, any loss of or diminution in appetite, the appearance of or an increase in headache, however slight, the appearance of or an increase in malaise, however slight, any increase in cough or expectoration or hemoptysis, the appearance of blood in sputum that had immediately previously been free from it, the occurrence of or an increase in weakness, or tire, no matter how slight, the appearance of or an increase in pain or ache in the chest or anywhere in the body, sleeplessness or an increase of insomnia, nausea, loss of weight in a patient who had been gaining or whose weight had been stationary, hoarseness or increase in hoarseness, aggravation of an aphonia, and any new symptom or sign or any aggravation of any existing symptom or sign occurring on the day the dose was given or on the following day. When the tuberculin is given hypodermically, any marked redness, edema, or pain at the site of the injection may be regarded as evidence of a reaction.

The interval between doses should at first be five to seven days. In careful hands after the first few doses an interval of three days may be allowed. To patients at work he usually gives tuberculin every Sunday morning, so they can rest should a slight reaction occur.

There is no necessity of increasing a dose that seems to do good—which apparently ameliorates the symptoms and depresses the

temperature curve—unless it seems to lose its effect. A dose that causes a slight reaction, from which the patient recovers in a day, may be repeated, but must never be increased. When a dose causes a moderate reaction it should be reduced one-tenth, the administration being withheld until all symptoms of the reaction have passed away. Should a marked reaction occur, the treatment should be suspended for at least a week after the disappearance of the signs of the reaction, and then given in the dose of one-hundredth to one-thousandth of that previously given.

The increase in dose should be gradual. Solis-Cohen believes it should not exceed 33 1/3 per cent of the dose immediately preceding. He also believes that the percentage of increase should be fairly equal, although it is often advisable that the increase be less than one-third. But he condemns the usual method of increasing 11½ per cent every tenth, twentieth, thirtieth, etc., dose, and then increasing the following dose one hundred per cent. The common way of administering tuberculin, and that recommended by the manufacturers, is in series of nine doses, the increase in each series being of the same quantity but naturally of a gradually diminishing percentage of the immediately preceding dose. The series of increase is usually given as follows: 100 p. c., 50 p. c., 33 1/3 p. c., 25 p. c., 20 p. c., 16 2/3 p. c., 14 2/7 p. c., 12½ p. c., 11 1/9 p. c.; 100 p. c., 50 p. c., 33 1/3 p. c., and so forth. The jump from the first to the second of each series the author regards as too great and consequently reduces it.

Discussion as to the method of introducing tuberculin into the system he has reserved for the last, as it is of least importance. He is personally familiar with only three methods—oral, hypodermic, and intramuscular—which seem equally efficacious. He prefers giving tuberculin by mouth because it is less troublesome, it avoids the possibility of infection, it keeps the patient in ignorance of what he is getting, when this is desirable, and chiefly because the patient can administer the tuberculin to himself. Among poor people the last is an important consideration. If one desires to personally watch the effect of each dose of tuberculin, only one professional visit is required, instead of one for injecting and another for observing. A patient kept on the same dose of tuberculin which has proven satisfactory can take several doses before being seen by the physician. The oral dose is the same as the hypodermic dose, or at least no larger. The reaction is the same, except for the local manifestations at the site of the injection.

Finally, a repetition of caution. A severe reaction means always damage and sometimes death. This can usually be avoided by beginning with very minute doses, increasing very gradually and only when indicated and when the previous dose has not caused the slightest reaction, and by examining the patient carefully and questioning him closely as to the occurrence of the slightest sign and symptom of a reaction. Administered thus carefully and cautiously the author believes tuberculin to be safe in the hands of the observant and critical general practitioner.

TREATMENT OF DIPHTHERIA AND DIPHTHERIA CARRIERS.

S. G. WILSON, in the *New Orleans Medical and Surgical Journal* for September, 1913, gives us these views:

The organism of diphtheria is transmitted from individual to individual, and man may serve as the intermediate host for a short period, or he may harbor the disease for months and months, never developing the disease or never having had the disease.

The organism may be found in the nose, throat, or ears.

The wiping out of the disease is possible by segregating the carriers.

The carriers are best treated by sunshine, segregation, and "vaccine therapy."

The best results in the treatment of the disease is by large doses of concentrated antitoxin, 10,000 units being the initial dose, given intramuscularly, with a period of twenty-four hours between doses, the mem-

brane being the chief guide for repeating the dose, except, of course, in the laryngeal type, and in this type the stenosis and cyanosis serving as guides.

It is rarely necessary to give more than 10,000 to 50,000 units of antitoxin in any case of diphtheria, and the earlier the serum is given the smaller amount will be required. Finally, nose and throat operations are contraindicated in the persons while they are carriers, and this fact should be determined before all operations on the nose and throat.

SALVARSAN IN PERNICIOUS ANEMIA.

Boggs writes in the *Bulletin of the Johns Hopkins Hospital* of October 15, 1913, on this topic. He first points out that the scattered reports on the use of salvarsan in pernicious anemia which have appeared in the last three years are conflicting and unsatisfactory. In many instances the observation was confined to a single case, and the salvarsan was only an accessory to the other standard therapeutic methods. As there has been repeated warning expressed in the literature against the use of salvarsan in this disease, it seems worth while to give a brief review of Boggs's own experience and some from the literature.

Bramwell's series of seven cases is an important contribution. With "cure" or favorable results in four cases, it is the most notable of the arguments for the use of salvarsan. Leede's five cases with unfavorable results are not nearly so instructive, as four of the cases were admittedly moribund when the drug was tried. The other case did seem to be injured by the two injections given.

Friedlander's case, refractory to Fowler's solution, was rapidly restored after two doses of salvarsan, followed by sodium cacodylate.

Through the courtesy of Professors Barker and Thayer, the writer has looked over the records of seven cases of pernicious anemia, treated in part with salvarsan, at the Johns Hopkins Hospital. Of these, one received 0.3 gm. and died forty-eight hours later from preëxisting myocardial degeneration, without any reaction or any material change in the blood count. This patient was considered moribund on admission. Another case died eighteen days after admission, receiving one dose of 0.2 gm. eleven days before death. There was no considerable reaction and no drop in the blood count of more than 200,000 cells. The remaining five showed improvement with initial drop in the blood count, never more than 200,000. As these cases also received sodium cacodylate or Fowler's solution, they are of value only as showing that the drug may be given to such patients without serious risk.

In Boggs's experience at the Baltimore City Hospital they have had four cases, all of which showed favorable reaction to the salvarsan in the regeneration of the blood and relief of the symptoms. One was a most remarkable apparent cure of a patient in his fifth relapse, who was quite unresponsive to Fowler's solution and only showed a very slight regeneration after a long period (four months) of sodium cacodylate injections. Under intravenous administration of salvarsan, in doses of 0.3 gm. every four weeks, he showed a steady rise in blood count. The red cells, in sixteen weeks, rose from 500,000 to 5,000,000, the hemoglobin from 23 to 90 per cent, and the patient was well except for the mild degenerative changes in the spinal cord. He worked in the hospital for six months as elevator man and then left for outside employment, and has been lost sight of. During the treatment the patient contracted tertian malaria and his blood count fell, but rose again after quinine and the next dose of salvarsan. This patient has no history of syphilis, and also had a negative Wassermann reaction in serum and spinal fluid before any salvarsan was given.

Another case of pernicious anemia, in which the nervous symptoms preceded the change in the blood picture by some months, was very responsive to salvarsan, his blood going from 1,100,000 to 3,400,000 red cells in twenty days after the first dose of 0.3 gm. intravenously, eventually reach-

ing 4,800,000 with 85 per cent hemoglobin. This patient gave no history of syphilis, and Wassermann reactions in serum and spinal fluid were quite negative.

In this case the patient seemed unable to sustain the higher level of blood formation and relapsed rather quickly, only to rise to approximately normal count again after two more doses. The blood picture, however, was never free from the qualitative changes of pernicious anemia. After several rallies of this kind, covering a twelvemonth, in which the subjective state was but little altered, the patient died of an intercurrent bronchopneumonia. Autopsy: typical changes of pernicious anemia, with funicular degeneration in the cord.

The other two cases, both negative for syphilis, received but one injection each, and were greatly improved, with an average rise of 2,000,000 red cells when they left the hospital.

In his own cases and those from the Johns Hopkins Hospital there was, as a rule, a rather sharp febrile reaction, lasting six or twelve hours after each injection, in contrast to the very mild, or absent, reaction in syphilitics. All precautions were taken with regard to technique, wasserfehler, and size of dose.

The results to date would certainly justify the further use of salvarsan in pernicious anemia, with special attention paid: (*a*) to the question of syphilis in the patient; (*b*) to the influence of salvarsan when given alone; (*c*) to the effect on arsenic refractory cases; and (*d*) permanency of the results.

IS THE PRESSOR EFFECT OF PITUITRIN DUE TO ADRENAL STIMULATION?

HOSKINS and MCPEEK, in the *American Journal of Physiology* of September 2, 1913, state that intravenous injections of pituitrin in small dosage can be repeated at intervals of ten or fifteen minutes without significant failure of their pressor effect in animals.

The adrenal glands of the dog can be ligated off without affecting general blood-pressure; in the pregnant cat, however, such ligation has been observed to cause fall of blood-pressure with subsequent rise when the ligatures were released.

In either animal occlusion of the adrenal circulation does not diminish the pressor effect of a standard dose of pituitrin.

There is probably, therefore, no direct dependence of adrenal functioning upon pituitary secretion.

RESULTS OF TREATMENT WITH SALVARSAN IN LATE CONGENITAL SYPHILIS.

In the *American Journal of Diseases of Children* for September, 1913, STRATHY and CAMPBELL write a report on this subject:

All their own cases improved clinically under salvarsan treatment.

The intensity of the Wassermann reaction diminished steadily with frequently repeated full doses, but in nine patients over four years who received four doses or more, only two became negative, and that after eight and nine doses.

The younger the child the more quickly does the Wassermann reaction become negative.

They have not found the administration of salvarsan by intravenous injection in children to produce any bad effects.

RESULTS WITH SALVARSAN IN HEREDITARY SYPHILIS.

HOLT and BROWN in the *American Journal of Diseases of Children* for September, 1913, reach these conclusions:

Immediate and striking benefit follows the injection of salvarsan in hereditary syphilis, and this is seen in many patients in whom mercury has been used with little or no apparent benefit.

Salvarsan must be given intravenously; with the technique described by these authors they claim its administration is not difficult and it is practically free from danger.

A single dose of salvarsan does not cure hereditary syphilis, although it often removes the visible symptoms. Relapses, however, are to be expected unless the dose is repeated. With present experience it seems advisable to repeat the injections at intervals for one year, even though no symptoms are present.

The best results in hereditary syphilis are undoubtedly obtained by the early use of salvarsan followed by mercurial treatment.

Even with the aid of the Wassermann reaction it is difficult to say when a child with hereditary syphilis is actually cured.

PITUITRIN IN LABOR.

In the *Australasian Medical Gazette* of September 13, 1913, OFFICER reports his use of pituitrin. He reaches the following conclusions: (1) Do not leave the patient after having given pituitrin; (2) pituitrin increases the force of the pains and lessens the interval between pains; (3) under chloroform the pains after administration of pituitrin do not altogether cease; (4) he has not had a case of retention of urine after pituitrin has been given; (5) the after-pains are not so severe; (6) the pains, though stronger, do not appear to be so acute; (7) the patients bear their pains much better; (8) the loss of blood immediately after labor is completed is not so great.

NOTES OF SOME CASES OF ECLAMPSIA TREATED BY VERATRONE.

HAULTAIN in the *Edinburgh Medical Journal* for October, 1913, reports cases treated successfully with veratrone. He says the paramount action of veratrone is as a vascular depressant, though it is said also to be a spinal sedative—a combined action which seems ideal for the treatment of eclamptic seizures. It is made up in 1-Cc. sterilized ampoules, and on injection intramuscularly gives rise to no local untoward effects. Its action is not only marked, but exceedingly rapid.

ADMINISTRATION OF ALKALOIDS BEFORE ANESTHESIA.

HERB writing in the *Journal of the American Medical Association* of September 13, 1913, reminds us that while the administration of morphine, scopolamine, and atropine before general anesthesia has certain advantages, these advantages are not sufficient to counterbalance the risks attendant on their employment.

The loss of the pupilary reflex is a serious handicap, as nothing else indicates so unerringly the degree of narcosis.

That the danger from ether, chloroform, or nitrous oxide is diminished is contrary to the evidence at hand.

They should not be employed when untrained, inexperienced anesthetists are in charge, as the anesthesia is rendered more complicated and extra skill and judgment are required.

The routine use of certain fixed doses before every anesthetic regardless of the patient's condition should be discouraged.

Nevertheless he believes the employment of alkaloids has a distinct field of usefulness before local analgesia.

THE USE OF PITUITRIN IN OBSTETRICS.

WELZ, in the *Journal of the Michigan State Medical Society* for September, 1913, reminds us that pituitrin is a powerful drug and care should be used in its administration. It should never be used until the accoucheur is familiar with his case and certain that no harm will result from its use. It is absolutely contraindicated where there is a disproportion between the size of the fetus and that of the pelvis, or where there is an obstruction. Instead of pituitrin, rest is indicated when the uterus is exhausted. As the drug acts best toward the termination of labor, and only slightly at the beginning, the time to use it is when dilatation of the cervix is complete or nearly so. Then the man in a hurry may use it instead of applying forceps, as is too frequently done. The intelligent use of this extract at the proper time should displace the forceps

very frequently. The result should be lower mortality and less morbidity among the new-born and mothers. It should lessen the suffering of mothers in numerous cases. Only when it is a rational procedure should it be used; it is senseless to inject it in every case. After the injection has been given, the physician should never leave his patient until labor is complete, for fear of precipitate labor; also, the case should be watched for possible trouble.

THERAPEUTIC ARTIFICIAL PNEUMOTHORAX.

In the *American Journal of the Medical Sciences* for September, 1913, KING and MILLS write on this topic and end their paper with the following general summary: In 16 cases in which the treatment has been tried two have shown marked and apparently permanent improvement, six have shown temporary or slight improvement, in one case of lung abscess no improvement followed, while in six cases, on account of pleural adhesions, either no gas could be injected or not enough to produce any sufficient collapse.

THE LIMITATIONS OF TREATMENT BY EXTRACT OF THE HYPOPHYSIS.

In an exhaustive critical study of the causes of the failures and the injuries in the administration of extracts of hypophysis, HOFSTÄATTER (*Monatschr. f. Geburts. u. Gynäk.*, 1913, vol. xxxviii, 142) reviews the literature on the subject with regard to its use in obstetrics as well as in other circumstances, such as affections of the bladder, osteomalacia, etc. He concludes that except in isolated cases of overdosage no important disturbances can be attributed to this medicament. Most of the unpleasant phenomena reported can be referred to nervous or blood-pressure symptoms. Many of them are purely accidental or misinterpreted results of a preëxisting condition. He emphasizes the fact that with the dose permissible to the human subject no case of injury to the kidneys has as yet been reported.

As for the administration of pituitrin during or immediately after parturition, it must for the present be admitted that in the early stage its action is still uncertain though not injurious. Its use as an ecbolic in the later stages is recommended only in order to induce the expulsion of a portion of the fetus or a "ballon" adhering to the lower portion of the uterus.

A sort of uterine tetanus has frequently been observed as a result of the medication, but serious injury to mother or child has but rarely been seen. In a transverse presentation the drug is positively contraindicated, but it may safely be administered in a breech presentation.

While up to the present no rupture of the uterus has been reported, still with a wider and perhaps less judicious use of the extract this is not unlikely to occur, and it is well to consider any ecbolic action contraindicated in cases which present signs of dilatation of the lower segment of the uterus. Since the reaction of the uterus to the stimulant cannot be predetermined it is well to begin with a small dose.

Pronounced uterine asphyxiation of the child may occasionally occur and is always an indication for the promptest possible termination of the birth—usually the application of the forceps. This can hardly be considered a disadvantage, as this new medication obviates one-third if not one-half of all former forceps deliveries.

Pituitrin is often useful in inciting labor or in producing an abortion; in cases of suspected infection or in abortions accompanied by fever it is advisable to avoid a violent increase of labor pains before the entire contents of the uterus have been expelled.

As with all drugs producing hypertension great care should be exercised in the use of this remedy in non-compensated or only slightly compensated defects, in arteriosclerosis, and in nervous patients.

The preparations still labor under the disadvantage that our knowledge of their content of physiologically active substance is

not exact, and that a precise histological differentiation of their function has as yet not been possible. Since the drug is now being manufactured in large quantities much of the annoyance due to its inconstancy is being overcome, nevertheless many of the apparent failures may be attributed to this source.

The explanation of individual results in the administration of the extracts is still very hypothetical; the reports of special cases of failure and of striking secondary effects are, therefore, interesting and valuable. Experiments along new lines, especially as to the components which produce hypertension, are not only necessary but full of promise, and with the proper care may be undertaken with safety.

INTRATRACHEAL INSUFFLATION ANESTHESIA.

In the *Journal of the American Medical Association* of September 13, 1913, PECK points out that intratracheal insufflation, administered with accurate control of the strength and amount of ether vapor, is a new principle in anesthesia which in certain classes of cases has many advantages over other methods.

The difficulty of intubating and the necessity of inducing full surgical anesthesia before this can be accomplished makes this a method unsuitable for many short, simple operations. Its use should be restricted to the cases in which it has special advantages.

It is absolutely safe both as to administration and freedom from deleterious after-effects if a proper apparatus is used and the simple precautions mentioned in detail are observed.

It is an ideal method of differential pressure for operations involving the opening of one or both pleural cavities, greatly reducing the danger of intrathoracic operations.

It greatly lessens operative shock: (*a*) through the absolute relief of strain on the respiratory apparatus and coincident freedom from strain on the circulatory apparatus and the central nervous system; and (*b*) from the even, advantageous degree of anesthesia maintained. This is especially evident in aged patients, in those cachectic from malignant diseases or anemia and debilitated from other causes. The disparagement of ether as an anesthetic as compared to nitrous oxide, so popular of late among the advocates of the latter, is based on observations of faulty methods of ether administration rather than the inherent toxic effect of the drug itself. The wide margin of safety with ether has so long permitted abuse of this drug that faulty technique has been assumed by its opponents as customary in its administration.

It prevents aspiration of mucus or saliva, vomitus, blood or other foreign matter into the trachea, simplifying and decreasing the danger of operations on the tongue, jaws, mouth, nose or pharynx, preventing aspiration pneumonia, and practically eliminating the necessity of preliminary tracheotomy in such cases.

It is especially useful in operations about the head and neck. The anesthetist is out of the way; the operative field is easily kept sterile, and obstruction of the upper air-passages is absolutely prevented. The same may be said of operations on the kidney, the spine, and in awkward positions in general.

The degree of anesthesia is under perfect control. Overetherization is impossible at or below 21 per cent by weight of ether vapor. Insufflation of pure air for the last few moments of the operation hastens the recovery of consciousness and minimizes the after-effects.

THE RATIONAL TREATMENT OF MORPHINE HABITUATION.

BERING, in *Northwest Medicine* for September, 1913, insists that it is imperative that a competent nurse attend the patient constantly during the administration of hyoscine. The room should be free from furniture or any article which may give the patient the basis for distressing illusions. It should be darkened, as the light may cause serious iritis.

The first period, that of preparation of

the patient for the administration of hyoscine by the elimination of toxic material, requires about one week. To accomplish this Bering opens the pores of the skin thoroughly by using vapor baths and small doses of pilocarpine. For the kidneys he uses any effective diuretic. For the bowels powdered cascara sagrada 24 grains, powdered ipecac 2 grains, podophyllin 3 grains, strychnine sulphate 1/3 grain; make into nine capsules, giving one at 5, one at 8, and one at 10 P.M. on alternate nights until the nine capsules are given. In addition he uses magnesia sulphate, castor oil, high enemas, etc. Should this treatment fail to secure free purgation within twelve hours after each administration he uses 1/20 grain strychnine sulphate hypodermically every four hours until three doses are given. This applies to a man of average size.

While the dose of strychnine recommended may seem excessive, it must be remembered that morphine patients require this large dosage to start peristaltic action on the almost paralyzed bowel, and that its administration is perfectly safe. During this first period the patient is encouraged to carefully limit the amount of morphine he uses, as more thorough elimination of toxic material is thus secured.

The patient is now in condition to enter the second period of treatment, that of administration of hyoscine and the complete withdrawal of morphine. About two hours before the patient would usually take his first daily dose of morphine he begins the hyoscine treatment, and from that time does not allow any morphine to be used. He endeavors to have the patient thoroughly under the hyoscine before the time at which he has been accustomed to take his first daily dose of morphine.

Bering gives 1/300 grain of hyoscine hypodermically every half-hour until its mild physiologic action is secured. This condition is indicated by redness of the face, dryness of the throat, dilatation of the pupils, mild hallucinations, and the slowing of the pulse fifteen or twenty beats per minute. One or more doses of hyoscine will put the patient to sleep for several hours, but he will not again sleep during this period of treatment. He discontinues the hyoscine until the patient awakes, then resumes it in increased doses, say 1/200 grain every half-hour until he again manifests the mild physiologic effects above mentioned.

If proper elimination has been secured we now have freedom from pain and an absence of the more pronounced nervous symptoms that would otherwise follow the abrupt withdrawal of morphine. There should be no chilly feeling, vomiting, purging, profuse sweating, aching of the bones, joints, or muscles; and there should be no sign of heart failure. In fact, the patient should be completely deprived of morphine and experience no more discomfort than usually attends a case of la grippe.

It is well to keep in mind that slowing of the pulse to 50 or 55 is to be expected under hyoscine treatment, but so long as it is of good tone and full volume Bering does not use a stimulant. He asserts he has had patients whose pulse-beat went below 50, and one ran as low as 36. This case required heroic treatment. The pulse-rate may increase to 100 or 120 beats per minute instead of decreasing, but this condition is due to excitement and not to the action of hyoscine.

In the event of the pulse going lower than 50, Bering gives strychnine sulphate 1/20 grain and sparteine sulphate 1 grain hypodermically, discontinuing the hyoscine until an improvement in the pulse-rate is noted. The practitioner who desires to do so, however, may reënforce the heart action with 1 grain sparteine sulphate or 1/100 grain digitalin administered hypodermically every six hours.

In some cases, in which thorough elimination has not been secured, or in which the patient has used atropine with his morphine, a larger dose of hyoscine is indicated. Bering has had occasion to increase the dose to 1/100 grain every half-hour for a number of doses, but as soon as the patient is under the hyoscine the dose should be reduced to the minimum.

After the patient is well under the influ-

ence of hyoscine he gives just enough to maintain its mild physiologic action. This amount varies with the patient. If he should suffer pain, more hyoscine is indicated. He is not afraid to give a dose every half-hour if needed, but discontinues it as soon as freedom from pain is secured.

During this second period, and after the sleep that follows the administration of the first dose of hyoscine and the withdrawal of morphine, the patient is restless, tries to get up and move about, talks at random, has many illusions and delusions. Cocaine patients manifest the symptoms in a marked degree, it being necessary at times to restrain them, but the morphine patient is easily controlled and is never boisterous.

These symptoms, however, together with the physical ones mentioned above, may seem formidable to one unfamiliar with the physiologic action of hyoscine, but there is no cause for alarm as the symptoms will all disappear with the discontinuance of the hyoscine treatment. It only requires that some one be with the patient to prevent him from getting out of bed and falling, as coördination is impaired when one is well under the influence of hyoscine.

Bering keeps up the mild physiologic action of hyoscine from thirty to forty hours; in most cases he suggests the latter. During all this period as well as the one following, careful attention should be given to the bowels, as persistent constipation may ensue. To prevent this he gives magnesia sulphate, citrate of magnesia, phosphate of soda, etc. He sees that the patient has water at frequent intervals to make up for the fluid lost through the skin. It further dilutes the toxins and helps to eliminate them through the skin and kidneys. Liquid nourishment is given during this period.

The patient now enters the third and last period of treatment, that of convalescence, about a week having been devoted to the first period and two days to the second—nine days in all. The length of period of convalescence will depend upon the patient's recuperative powers and will extend over a period of three to five weeks, requiring a total of from six to eight weeks in the sanitarium.

We have now to deal with a neurasthenic whose convalescence is like that of a patient recovering from a severe illness. It is better for the patient to remain in bed and to take only liquid nourishment every two or three hours during the first week of convalescence, after which time solid foods may be used.

Bering wishes to emphasize one of the most important features of this, the third, stage of treatment. The patient has had no sleep since that at the beginning of the hyoscine treatment, and he may be in an extremely weak, exhausted, and irritable condition, due to lack of sleep, nourishment, and to the readjusting of vital functions in response to changed conditions. Tact, patience, and good judgment on the part of the attendant are essential at this time.

It is highly important that the patient now secure proper rest and healthful sleep during convalescence. In no article on hyoscine treatment, so far as the author is informed, is more said than that the patient should woo sleep for himself. His inability to do this has often been the cause of unfavorable results. Since realizing this important feature Bering has had no failures from this source.

About five or ten hours after the patient has had his last dose of hyoscine, and before he is entirely free from its influence, Bering gives bromide of potash 30 grains and chloral hydrate 10 grains. This usually provides a number of hours of the much needed sleep. He keeps the patient well under bromide and chloral for a day or two, or until he has secured sufficient sleep, and then gives the dose only often enough to allay the intense nervousness from which he suffers.

The second day after discontinuing the hyoscine he gives veronal 7½ grains at 4 P.M., repeating the dose in two hours. Sulphonal may be substituted for the veronal. The patient should not know what he is taking or what he is taking it for. He uses this drug on alternate nights

for a week or ten days, then discontinues it. Bering usually gives a tonic of iron, quinine and strychnine three times a day.

After the tenth day of convalescence he requires the patient to take sufficient exercise daily to produce mild fatigue and to retire at an early hour. If he has any pain or diarrhea it is due to autointoxication and should receive careful attention.

At the end of the period of convalescence the patient has increased in weight twenty to thirty pounds. He has a normal appetite and sleeps without aid of a soporific. He has returned to a normal frame of mind and has no desire whatever for his accustomed drug. He returns to his customary occupation with confidence in himself and the assurance that he is forever free from the slavery to which he has long been subjected.

TREATMENT OF DIARRHEA IN ADULT LIFE.

CABOT and EMERSON write on this subject in the *Journal of the American Medical Association* of September 27, 1913. They say the following experience has been frequently repeated in this series of cases and has left a deep impression on their minds: A patient seeks hospital care with a history of a most obstinate diarrhea which has persisted for months, even for years. He is put to bed in a hospital ward, and before treatment is begun the preliminary investigation and preparation of his case occupy probably the first twenty-four hours of his stay in the hospital. During this time the remarkable fact is noticed that he has had no diarrhea—indeed, that his bowels have not moved at all. In view of this fact no treatment for the previously troublesome diarrhea is instituted. One waits for the familiar symptom to appear; but it never appears. Day after day passes, and finally the bowels have to be moved by enema or by a laxative. At first they interpreted the absence of diarrhea as a cure of the enteritis, but further observations of the patients after they had left the hospital showed that in many the diarrhea promptly reappeared as soon as the patient resumed his ordinary habits and occupation. In view of this it seems that one must interpret the disappearance of the diarrhea in such cases as due to the remarkable effect of lying in bed. And in fact lying in bed seems by far the most efficient and potent remedy at our command in a large number of the acute and the chronic diarrheas. Many of the patients just referred to had been treated unsuccessfully by every known method previous to entering the hospital, but had not remained in bed. This was the one thing that had not been done for them. How far this remedial effect of rest in bed is to be attributed to an effect on the splanchnic circulation we have no means of judging. It is well known that patients with diarrhea become faint, especially during and after the discharges. This faintness is doubtless associated with a low peripheral blood-pressure, and it may be that rest in bed raises the average peripher blood-pressure with a correspondingg improvement in the splanchnic circulation. In some of these cases they have demonstrable evidences that the intestinal ulcerations associated with the diarrhea have shown no appreciable tendency to heal, even though the diarrhea itself has been wholly checked as a result of rest in bed.

The good results of purgation in all acute and benign cases are too familiar to need further emphasis. Their experience in this series of cases goes to support the traditional belief that purgation, by means of castor oil or magnesium sulphate, is second only to rest in bed as a remedy for diarrhea. They have seen no special reason to prefer one of these two purges to the other. Either is usually efficient. They are occasionally of value even in cases which have lasted for many weeks. But when definite ulceration is present in the bowel, purgation almost never gives more than temporary relief. Hence the importance of proctoscopy and stool examination as a guide to treatment.

Diet.—For acute cases from twenty-four to thirty-six hours' starvation with catharsis is the ideal treatment. Boiled milk has a long enjoyed reputation, and many

patients recover during (perhaps because of) its administration. In chronic cases it is the rule at the Massachusetts General Hospital to give a diet low in fats and carbohydrates.

Irrigations.—Daily irrigations of the lower bowel with warm normal saline solution seem to be of benefit in many obstinate cases. Astringents whether by mouth or rectum have helped them little. Weak solutions of silver nitrate sometimes produce immediate benefit. If one injection does no good, it is not worth while to repeat it, especially as the remedy is always a painful one and occasionally makes the patient distinctly worse. Quinine injections for amebic dysentery deserve to be given up now that the use of emetine has been discovered. Injections of cooked starch or mucilaginous substances are useful to allay tenesmus.

Olive Oil.—This substance has distinct value in the treatment of long-standing cases with or without ulceration. It has been extensively used in the Presidio Hospital at San Francisco for obstinate diarrheas in soldiers invalided home from the Philippines. They have used it successfully in doses of ½ ounce after meals in some ambulatory cases of chronicity, but have not yet distinguished the types most benefited or the method of its action.

Psychic Influences.—The good results produced by change of environment are, they suppose, mostly psychic. Morning diarrheas can often be promptly cured by a "change of air" and are sometimes very hard to cure in any other way. How far differences of food and of drinking-water may enter into this result is doubtful.

A most amazing result of a similar "change of air" was seen by one of the writers in 1898 when the hospital ship *Bay State* took on board from Porto Rican harbors 125 sick Massachusetts soldiers. Practically all of them were suffering from diarrhea of many weeks' duration and had become greatly discouraged and depressed. Within two days of their embarkation on a boat pointed for home, almost every man was free from diarrhea and eating ravenously of the two substances hardest to get in Porto Rico—bread and butter.

Drugs.—The subcutaneous use of emetine in amebic dysentery, as advised by Rogers, seems one of the most brilliant therapeutic results in the history of medicine. Their experience with this drug in a few cases wholly substantiates the reports of Rogers, Futcher, Bass, and others.

Of opium they have nothing new to say. Its definite though limited value is well known in acute cases, occasionally even in chronic cases to break up a pathological habit.

Bismuth in doses of from 30 to 60 grains, from once to three times daily, seems to us of value in some obstinate cases when combined with rest and diet. The smaller doses formerly employed do not seem rational and have not been effective in the authors' hands.

Sodium salicylate proved curative in one long-standing case which had resisted many other remedies.

Operative (Cecostomy).—Cecostomy and irrigation of the bowel has been tried but little in their field of work, and their experience does not warrant them in giving a definite opinion. Their impressions are not favorable.

THE SPECIFIC USE OF SALICYLATE IN ACUTE RHEUMATISM: A CONSIDERATION OF PRACTICAL OBJECTIONS.

In the *Quarterly Journal of Medicine* for July, 1913, MILLER concludes that he is not concerned with the truth of the theory that salicylate diminishes the activity of the rheumatic infection. He has examined certain objections to this view and submits the following conclusions on the issues raised:

1. The objection that the larger doses of salicylate do not imply increased absorption of the drug is without foundation.

2. The objection that the larger doses are too prone to produce vomiting to be of value is only partially true. The production of vomiting is more a matter of the type of

case under treatment and the methods of administration than the size of the dose employed. The vomiting produced in severe cardiac cases must necessarily be a limitation to any antirheumatic action which the drug may possess in rheumatic carditis.

3. The objection that large doses are too prone to produce acid intoxication to be of value is only partially true. The method of administration is of more importance than the size of the dose.

The objection that the larger doses are dangerous and tend to increase fatalities is not supported by the series of cases he examined. It is again a question of knowing how and when to use the drug.

The objection that the specific use of salicylate is unsound, as relapses, particularly of nodules, are not prevented, is not well supported by the series of cases examined. Most of the relapses occurred on or after small doses or a short period of administration of the drug; cases taking large doses showed some immunity to relapses. Nodules are not generally more commonly found in relapses than are other manifestations; and where they develop under large doses it seems that they signify little, if any, fresh activity on the part of the infection.

ON THE USE OF PITUITARY EXTRACT IN OBSTETRICS.

HARRISON in the *Archives of Internal Medicine* of September 15, 1913, asserts that pituitary is of great value in cases of weakness in uterine movements after the soft parts are well dilated. Failure in these cases is rare, probably less than one per cent. The later in labor, but before delivery, the more striking the effect. The danger to the child and mother is very slight.

As an addition to some mechanical method—*e.g.*, the Champetier de Ribes bag—it is of great value in bringing on premature labor or abortion. In the former case it may be sufficient in itself, but there is some risk of tetanus of the cervix, or of the uterus, especially when repeated injections are required.

For delivery of the placenta its use is accompanied by the danger of tetanus uteri and retention.

In postpartum hemorrhage a considerable percentage of failures may be expected.

When a need for a uterine stimulant arises in cases conforming to the above indications, Harrison believes that pituitary is of the greatest value.

RAPID DELIVERY IN ECLAMPSIA.

In the *British Medical Journal* of January 17, 1914, JARDINE says:

"In the issue of December 27, 1913 (p. 1625), Dr. R. Carmichael Worsley states that during upwards of twenty years of general practice he has treated several cases of eclampsia, and that he has now discarded such temporary measures as chloral and bromides, venesection and transfusion, etc., in favor of prompt emptying of the uterus. He advises the administration of a full dose of morphine, and if more than one fit has occurred, immediate dilatation of the cervix by means of screw dilator, and delivery even when the external os will only admit the finger.

"In contradistinction to Dr. Worsley's experience, I ask to be allowed to give mine. During upwards of twenty years of practice I have treated not several but several hundreds of cases of eclampsia, and now never advise nor practice immediate delivery in ordinary cases, unless the labor is well advanced. I have treated scores of cases by immediate delivery, but have given up this method in favor of a waiting policy, and the results have been much better.

"At the present moment I have eight cases under treatment in the maternity hospital, four under my own care and four under the care of a colleague. In all the waiting policy has been adopted, and the patients are doing well.

"I might instance many other similar cases, but these should be sufficient, on the standard which Dr. Worsley has adopted. I do not attempt to lay down any lines as to the proper treatment of eclampsia on the strength of my experience of several

hundred cases, but I would like to draw attention to the use of veratrone in these cases. Many years ago I tried veratrum viride, but gave it up, as I found the effect was very uncertain, but on the issue of its active principle, veratrone, I again began to use it, with very good results. When the pulse-rate and tension are high, it has a most remarkable effect."

In the cases which he quotes in his paper the pulse-rates were reduced from 130 or 140 to from 60 to 70 within half an hour. In one case the reduction of something like 60 beats was followed by such alarming depression that 1/30 grain of strychnine was given hypodermically, and the patient quickly rallied. Morphine is said to be an antidote to veratrone, but in one case the two drugs were given together, and the reduction of the pulse-rate and tension occurred, just as if veratrone alone had been given. The drug has a very powerful effect, and when it is used after delivery the depression may be alarming. In one case the patient looked as if she were dying, but a hypodermic of 1/30 grain of strychnine quickly rallied her. In another case he had a somewhat similar experience.

"The treatment of eclampsia is very unsatisfactory, and it will remain so until we find the real cause of the condition.

"The veratrone used was that supplied by Parke, Davis & Co. The full hypodermic dose (1 Cc.) equals 20 minims of tincture of veratrum viride (B. P. 1885), which was of the strength of 1 in 5.

"Since the above was written I have had another striking instance of the value of the drug. A primipara was admitted in a very restless and violent condition. It took three nurses to keep her in bed. Within half an hour of the administration of veratrone she had become quite quiet, and her pulse had fallen from 132 to 72. She had had six fits before admission, and two more occurred shortly afterward. Next day she was delivered of a live child by low forceps. No fits occurred after the veratrone was given. The mother and child are doing well."

THE EXCITING CAUSES OF VENTRICULAR FIBRILLATION IN ANIMALS UNDER CHLOROFORM ANESTHESIA.

In *Heart,* vol. iv, No. 4, LEVY reaches these conclusions:

The mammalian heart, when under the influence of chloroform, is in an "irritable" condition. This irritability is raised under conditions of light anesthesia, and lowered under conditions of deep anesthesia.

Abnormal ventricular beats are evoked in a heart under chloroform by conditions which stimulate it or by equivalent conditions which remove or reduce depressing influences.

Under conditions of light chloroform anesthesia the ventricular irregularities resulting from cardiac stimulation may terminate in ventricular fibrillation and death of the heart.

Stimulation of the heart may be effected: (*a*) As a reflex from sensory excitation. (*b*) As a result of an intermittent administration of the anesthetic. (*c*) As a result of the state of nervous excitement accompanied by struggling induced by chloroform in the earlier stages of its administration.

Ventricular fibrillation is a cause of death under chloroform, probably the only cause of any moment. It can be prevented by steadily maintaining a full degree of anesthesia.

REST AND REPAIR IN PULMONARY TUBERCULOSIS.

In the *Journal of the American Medical Association* of August 16, 1913, FLINN has this to say of the essentials of treatment:

Although much good work has been done in the last ten years on the influence of serums, vaccines, and other special treatments in pulmonary tuberculosis, so much has been written along these lines that the profession is apt to forget that fresh air, good food, and rest are still the *sine qua non* of treatment in this disease. They are the principal working tools of the craft, and surely it is the part of a master-workman to

perfect himself in the use of these, rather than to neglect them in experimenting with instruments many of which are of doubtful utility.

The truly wonderful therapeutic effects of fresh air and good food have long been known to the profession, but rest is an agent the use of which physicians have been slow to recognize. As all three are of such importance it is indeed difficult to compare them. Perhaps one cannot better express their relative importance than by a paraphrase. In the treatment of pulmonary tuberculosis there now abideth fresh air, good food, rest—these three; but the greatest of these is rest.

AVOIDANCE OF SUDDEN DEATH FROM THE INDUCTION OF AN ARTIFICIAL PNEUMOTHORAX.

So much has been said in the journals about this plan of treating tuberculosis of the lungs that LILLINGSTON in the *Lancet* of September 13, 1913, suggests the following "dont's:"

(1) Don't inject gas without satisfactory manometric oscillations, or at a pressure exceeding the atmospheric pressure when beginning a first injection. (2) Don't spare anesthetics. (3) Don't create a high intrapleural pressure. A pressure of 40 cm. of water may cause no discomfort during an injection, but it may be more than doubled by a subsequent fit of coughing, and a leak may thus be sprung in the pneumothorax. (4) Don't induce a pneumothorax during menstruation, when reflex excitability may be raised. (5) Don't puncture on the first occasion in many different places in a search for free pleura; patients have collapsed after the sixth or seventh puncture who have tolerated the first punctures well. It is better to continue the search for free pleura in a day or two. (6) Don't inject gas rapidly or at a low temperature. Brauer has once seen symptoms of pleural reflex after the use of cold gas. (7) Don't use large needles or needles with rough surfaces; and don't let the rubber tubing drag on the needle during an injection. (8) Don't inject till the patient's posture is easy and comfortable. (9) Don't hesitate to withdraw the needle at the earliest sign of collapse. (10) Don't operate without brandy and a hypodermic syringe full of ether handy.

Aspiration pneumonia and accidental pneumothorax are rare. The former loomed large in medical literature more than a decade ago, when it was regarded as a serious danger to the uncompressed lung. Begtrup Hansen has collected five cases, including one which he has personally observed. In this case recovery was effected after some of the injected gas had been withdrawn. This complication may be a sequel to the rapid induction of a large pneumothorax at the first injection, and it is therefore sometimes associated with hemoptysis, the arrest of which has been effected by the complete collapse of one lung by a single injection. When a pneumothorax is induced gradually the risk of aspiration pneumonia is negligible, and when violent hemoptysis requires the immediate collapse of the whole lung the risk of aspiration pneumonia must be taken, and it is slight considering the many cases in which hemoptysis has thus been successfully arrested.

An accidental pneumothorax may follow the introduction of the pneumothorax needle into a tuberculous cavity. Hence the advisability of introducing the needle at a point where the lung is healthy. Fortunately, when cavities lie near the surface the adjacent pleuræ are usually adherent, and when the pleuræ are non-adherent the visceral pleura and underlying lung are usually so soft and elastic that they become indented without being punctured. When a puncture of the visceral pleura occurs it seldom transmits gas. The author asserts he must have pricked the lung often, but has not yet seen an accidental pneumothorax follow. This accident may also occur as the result of a too high or a too low intrapleural pressure. When the pneumothorax is not often enough refilled, the intrathoracic pressure becomes negative, and a state of unstable equilibrium is set

up. If now the patient takes violent exercise involving great inspiratory efforts, the intrathoracic pressure becomes yet more negative, and air may break through a weak spot in the visceral pleura from the bronchi and into the pleural cavity. If, on the other hand, high intrapleural pressure has been created with a view to breaking down adhesions, a portion of the visceral pleura and lung may be torn away and remain adherent to the parietal pleura. Two such cases, one of which terminated fatally in a few days, have lately been recorded. Forlanini has collected a few cases. The condition may simulate the escape of gas from the pneumothorax into the mediastinum, when relief can be obtained by aspirating gas from the pneumothorax. But when an accidental pneumothorax has occurred aspiration is futile if the escape of air into the pneumothorax continues.

Conclusion.—Most cases of sudden death from the induction of a pneumothorax are due to errors of technique. With care these accidents should be extremely rare, and they should not prevent the adoption of the treatment in suitable cases.

REPORT ON URINARY ANTISEPTICS.

JORDAN makes a report on this subject to the *British Medical Journal* of September 13, 1913. He reaches these conclusions:

The acidity of the urine is readily increased to an extent of more than double the normal by acid sodium phosphate, and to a considerably less extent by benzoates. With large doses of citrates it is easily rendered alkaline.

Putrefaction of the urine and the growth of the staphylococcus is aided by alkalinity and delayed by acidity in proportion to the amount thereof. The reverse is the case with B. coli, but only to a small extent; its growth in both acid and alkaline urines is quite luxuriant.

Hexamethylenetetramine is not itself antiseptic, but acts by producing formaldehyde in the urine. This only takes place in acid urine, and the drug is inert in alkaline urine. The degree of antiseptic power is proportionate to the acidity, and where this is normal or higher the drug is far the most efficient of all the urinary antiseptics. Despite its undoubtedly different behavior in the test-tube, there is no evidence that helmitol acts differently to hexamethylenetetramine in the urine, and this remark applies also to citramine, hetraline, and cystopurin.

Sandalwood oil is a bad general antiseptic, but appears to have specific action on the staphylococcus which may apply to cocci generally. It is of some use in alkaline urine.

Benzoic and salicylic acids are very similar in action. Both are fairly efficient antiseptics in the urine, but are of very little use in alkaline urine.

Boric acid is an efficient antiseptic. Its action is unaffected by alkalinity, so that it is the most efficient drug in alkaline urine we possess.

Uva-ursi is quite a good antiseptic. Its action is certainly not due chiefly to the arbutin it contains.

The whole of his work was done with a view to its clinical application, and the drugs were chosen and investigated with a view to obtaining increased knowledge of their therapeutic application. The following are, Jordan thinks, legitimate practical deductions:

The use of urotropin (together with acid sodium phosphate, which should always be given with it) as a prophylactic before any operation or procedure where the urine may become infected is of the utmost value, since if the urine is clean and highly acid, and sufficient urotropin is given in small doses to keep it continually present, the urine will not support the life of any organism, and becomes indeed a powerful antiseptic fluid.

Urotropin should only be given when the urine is or can be made acid, otherwise it is inert. It should never be given with potassium citrate in B. coli infections. If it is desired to try the effect of making the urine alkaline in these conditions, use boric acid and uva-ursi infusion.

When the urine is undergoing ammoniacal fermentation in the bladder, washes or some operative procedure will always be the most important part of the treatment. The best drugs to use are boric acid in large doses, uva-ursi, and possibly sandalwood oil.

Sandalwood oil is always worth trying in a cystitis due to the staphylococcus alone.

When acid sodium phosphate is prescribed it is as well to write the chemical formula (NaH_2Po_4) on the prescription and to ascertain that the right phosphate has been dispensed. It is worth while in giving this drug to estimate the acidity of the urine occasionally to make sure that there is an increase. Unless the acidity is kept up urotropin will not act efficiently, and a high acidity is of much more value than a large dose of urotropin.

THE COMPARATIVE VALUE OF VARIOUS SUGARS IN THE FEEDING OF INFANTS.

HASKELL, in the *Archives of Pediatrics* for August, 1913, contributes a valuable paper on this subject. He says that if the results secured by the addition of lactose to the milk modifications are examined, it is seen that the use of a cereal diluent apparently has a favorable influence, if we judge by the character of the stools and the general condition. If, however, the weight change be taken as a criterion, it is evident that the reverse is true. It should be noted, however, that the percentage of sugar and the energy quotient are lower for the barley-water series than they are for that in which plain water was used as diluent.

Where 80-per-cent maltose was used, there were only two cases in which a cereal diluent was employed. So far as the limited number of cases allows a judgment, no appreciable difference existed between the two series. The same may be said in regard to the pure maltose, but in the dextri-maltose series a greater gain occurred where plain water was used as diluent, but the nature of the stools also became worse in a larger number than in those cases in which a cereal diluent was used. It is seen, however, that the sugar percentage was quite different in the two series, which might account for both facts. Similar conditions exist in regard to malt extract, and the same explanation may be offered. Apparently the use of a cereal diluent did not exert any very marked influence.

One of the most important indications of an infant's satisfactory progress is the weight increase. From a table he publishes it is seen that the great sum total weight increase occurred in the series of infants fed on mixtures containing malt-soup extract, while the greatest total loss occurred in the lactose-fed series. From an examination of the individual tables, however, we find that some of the infants receiving lactose suffered considerable losses, more than offsetting the moderate gains in a large number of cases. It is probably fairer to rate the sugars according to the percentage of cases which showed an increase in weight.

Mere increase in weight alone is not a reliable index of progress. When, however, the state of the stools is good and the infant's general condition satisfactory, more trustworthy conclusions may be drawn. If these three factors are considered, the following grouping is possible:

	Gained in weight Per cent.	General condition improved Per cent.	Stools became worse Per cent.
Malt-soup extract...	83.35	58.82	23.52
Lactose	51.50	27.27	33.33
Dextri-maltose	41.66	25.00	41.66

Thus it is evident that of the three sugars considered, malt-soup extract was distinctly superior in all three respects, while dextri-maltose was decidedly of less value than lactose. Pure maltose, saccharose, and 80-per-cent maltose cannot be included in the table; for 80-per-cent maltose caused a weight increase superior to that present in the lactose series, but the general condition was improved in less than 15 per cent of the cases receiving the former sugar, and the stools became worse in 57 per cent of them. Slightly similar

conditions exist in regard to pure maltose and saccharose. This is due, in all probability, to the small number of cases studied, so one may dismiss the three latter sugars from consideration until more evidence is forthcoming.

Why should malt-soup extract produce better results than those following the use of the other sugars?

The first possibility is that many of the infants had received sugar injury before coming under observation; and, as has been mentioned, lactose and saccharose are much more commonly used in America, by the laity certainly, in feeding infants. Thus it is easily understood why a malt sugar would be better utilized than lactose. But the effects following the use of dextri-maltose compel us to discard this explanation as untenable.

It might be supposed that the presence of an alkali in the malt extract exerted an influence, but many of the infants fed upon other sugars received 5, 10, or even 15 per cent lime water.

The protein content of the malt extract present in the milk dilution is so small that it could scarcely be of importance in cases in which the milk protein was always high.

The quantity as well as the quality of the food exerts an influence on the weight change. The sugar percentage and the caloric value of the malt-soup extract series are higher than in either lactose or dextri-maltose series. This would seem to offer a satisfactory explanation for the weight increase after malt extract, but why did not the dextri-maltose series show to better advantage than did the series receiving lactose? Moreover, the general condition and the stools in the malt-extract series are better than in the other two series, which is not compatible with overfeeding.

In conclusion, it must be clearly understood that the evidence presented has no bearing upon the selection of a sugar for feeding "normal" infants. Haskell has seen nothing in the literature to prove, nor have any observations been made in support of, the contention that the maltose-dextrin mixtures are in any way superior to lactose for addition to the food of the average infant. That malt-soup extract is superior to lactose and the latter in turn preferable to dextri-maltose seems indicated by their results, but the small number of cases and the limited time of observation make him hesitate to draw positive conclusions.

GONOCOCCUS VACCINES AND GLYCERIN EXTRACTS OF THE GONOCOCCUS IN THE DIAGNOSIS OF GONORRHEAL INFECTIONS.

SHATTUCK and WHITTEMORE in the *Boston Medical and Surgical Journal* of September 11, 1913, write on this theme.

The conclusions reached from the published work of others to which they refer in their paper are as follows:

Reactions thus far observed after injections of gonococcus vaccine have not been clearly specific for gonorrheal infection.

The reactions seem to show a selective action in some types of gonorrheal disease.

Local reactions after injections are common in non-gonorrheal cases. They are not valuable for the diagnosis of gonorrhea or for demonstration of its cure.

Focal reactions are seen frequently in active gonorrheal arthritis and salpingitis; but, whereas they have been observed in cases showing no other evidence of gonorrhea, their diagnostic value is small.

A general reaction is seldom noticeable, and it may be easily simulated by slight symptoms due to other causes. It has, *per se*, no diagnostic value.

Gonococcus vaccine autolyzes rapidly, and thus undergoes changes little known.

The conclusions reached from their own work are as follows:

The concentrated vaccine used by the writers showed no superiority for diagnostic tests.

It produced in gonorrheal and in control cases a local lesion like that of a chemical irritant. They think that autolysis may have been a factor in producing the supposedly irritating properties of their vaccine; that the changes in the vaccine may

have prevented it from producing a specific reaction; and that the unsatisfactory therapeutic effects of gonococcus vaccine may, perhaps, be traceable to autolysis.

Glycerin extracts of the gonococcus inoculated by the method of von Pirquet caused, in a few cases, the formation of peculiar papules which may have represented a specific reaction. Most of the cases showed no definite reaction.

Although their tests were negative in the main, and although the work of others using similar methods has yielded unsatisfactory results for diagnosis, they desire to emphasize their belief that failures serve as guide-posts to progress, and that present knowledge justifies the hope that a valuable diagnostic test for gonorrheal infection may yet be devised through improved methods of preparing vaccines or extracts of the gonococcus.

EMETINE HYDROCHLORIDE IN THE TREATMENT OF AMEBIC DYSENTERY.

The *New Orleans Medical and Surgical Journal* for October, 1913, contains an article by LYONS on this topic.

He believes that emetine may prove to be of great value in the treatment of amebic disease. Whether the cures thus far reported will be permanent cannot yet be foretold; still it must be borne in mind that relapses often occur because patients are discharged as cured too soon; nevertheless the fault is attributed to the medication.

Again, many recurrences that are reported among ignorant individuals (especially true in respect to negroes) are due to the fact that the patients return to the same infected localities and conditions whence the disease was derived, and the so-called relapse may not be due to a reinfection from within, but to a fresh infection from without.

Whether emetine will replace ipecac, which is its parent, as a therapeutic agent, or will be found more valuable in conjunction with it, remains to be proven. Certainly in those cases in which ipecac for some reason cannot be taken by mouth the treatment will be a boon. As a method of administration it is far superior to the ipecac therapy, as any one who has had experience in giving large doses of salol-coated ipecac pills will vouch for. In short, from Lyons's limited experience with Rogers's new treatment he believes it to be worthy of a very thorough trial.

THE INTENSIVE TREATMENT OF SYPHILITIC NERVOUS AFFECTIONS CONTROLLED BY EXAMINATIONS OF THE CEREBROSPINAL FLUID.

BREM, in the *Journal of the American Medical Association* of September 6, 1913, says that as a working hypothesis one may assume that syphilitic patients with positive findings in the cerebrospinal fluid have the infection localized in the central nervous system or meninges, and are candidates for the late syphilitic nervous phenomena.

Every syphilitic patient should have his cerebrospinal fluid examined, and in positive cases the treatment should be continued in an effort to change the fluid to normal. The positive tests in the cerebrospinal fluid are much more difficult to reduce than the Wassermann reactions in the blood, therefore a negative blood is not a criterion of cure.

There is little or no relation between the blood Wassermann and the reactions of the cerebrospinal fluid.

In the treatment of fourteen cases of syphilis of the central nervous system, thirty-eight examinations of the cerebrospinal fluids have been made and sixty-eight intravenous injections of salvarsan have been given along with vigorous mercury treatment. Two positive fluids have been changed to normal, and in another the Wassermann reaction has been completely reduced, while the globulin reaction became weakly positive.

The mean reduction of the Wassermann reaction has been about 50 per cent for each group of three injections of salvarsan. Symptomatic improvement has been

roughly parallel with the reductions of the reactions in the cerebrospinal fluids.

The intensive treatment of syphilitic affections of the central nervous system has not yet been proved a failure, and when carried far enough and properly controlled it offers great promise for the future of these hitherto incurable patients. The method is probably capable of further development, and its efficiency may be greatly enhanced.

OBSERVATIONS ON THE ACTION OF DIGITALIS.

In the *Maryland Medical Journal* for September, 1913, BARTON says that, historically considered, it is interesting to note that the lately-discovered fact that digitalis depresses the conductivity of the bundle of His, thus acting upon the heart by lowering one of the important functions, tends to restore the older view that essentially considered digitalis is a sedative much more than a stimulant to the heart.

Physiologically considered—that is to say, upon healthy animals under the conditions of laboratory experiments—digitalis slows the heart through vagus stimulation, increases the force of the systole, diminishes the extent of diastole, constricts the vessels, and raises the blood-pressure. A depression of the healthy bundle has not unequivocally been made out.

Clinically considered, it is found that beneficial therapeutic effects from digitalis are found almost exclusively in that particular form of cardiopathy which has received the name of auricular fibrillation. In this condition the effects of digitalis are quite marvelous. In auricular fibrillation the bundle of His may be assumed to be in a condition of pathological excitability and irritability, since normal impulse formation is replaced by impulse formation at multiple auricular foci. The action of digitalis in auricular fibrillation is to depress the function of the bundle of His, and thus to reduce both the formation and the transmission of pathologically formed impulses. Vagus stimulation plays no part in the slowing of the heart, except in non-fibrillating cases. Whether or not the force of ventricular contraction is increased is not known. It is not inconceivable that digitalis may produce a simultaneous depression and stimulation of different parts of the cardiac musculature.

THE TREATMENT OF HEMORRHAGIC DISORDERS.

Writing on this subject in the *Journal of the American Medical Association* of October 4, 1913, COOLEY claims that blood therapy of some kind is the best remedy we have for hemorrhagic conditions.

In hemophilia blood-serum seems to have a specific action so far as checking the hemorrhage is concerned. It may be used as a prophylactic measure, as well as to stop existing hemorrhage. Fresh human serum is probably to be preferred.

In purpura, melena, and other toxic conditions, in which various blood elements have been shown to be lacking, none of the serums are always effective, and there are good theoretical and clinical reasons for believing that whole blood should be preferred not only to stop hemorrhage, but for a possible curative effect on the underlying disease condition.

Transfusion is not really a difficult procedure. It is deserving of extended trial—not as a last resort, but as the first treatment in any of the hemorrhagic diseases of toxic nature.

ON THE USE OF SCOPOLAMINE, MORPHINE AND ATROPINE IN PREVENTING SHOCK DURING CHLOROFORM ANESTHESIA.

In the *Indian Medical Gazette* for October, 1913, DUNN tells us the following results are produced by the use of the combination:

1. The patient is brought to the operating table more or less stupid and sleepy, and consequently there is, as a rule, little or no "operation funk."

2. Owing to the narcosis and lessened sensibility to pain, a relatively small amount

of chloroform is required to obtain and maintain satisfactory anesthesia, and what is more important, the degree of anesthesia never requires to be pushed so far as to cause complete loss of corneal reflex, even in the most severe abdominal operations; consequently

3. There is an entire absence of stertor and embarrassment of respiration during the stage of anesthesia, and hence there is no need for the use of tongue forceps and pushing forward of the lower jaw, matters of great importance to the subsequent comfort of patients, who when these maneuvers are employed often complain for days after of a sore tongue and pain at the angle of the jaw.

4. The paralysis of the cardiac inhibitory apparatus, stimulation of the respiratory center, increase of blood-pressure, lighter anesthesia and hemostatic action produced, are all powerful factors tending to the absolute prevention of postoperative shock.

5. Owing to the effects on the gastro-intestinal tract, postanesthetic vomiting and postoperative flatulence are either absent or reduced to a minimum, points of great importance in abdominal cases.

6. The drowsiness and lessened sensibility to pain continue for some time after the operation, allowing of the initial soreness of the wound to wear off to a considerable extent and thus conducing immensely to the comfort of the patient.

7. The method appears to be applicable in the case of fairly young children.

SOME REMARKS ON ACUTE MANIA AND ITS TREATMENT.

ANDERSON, in the *Australian Medical Gazette* of September 27, 1913, has this to say as to treatment:

The treatment of acute mania is the treatment of symptoms, and is essentially a sedative one. All are agreed that it is better to treat the acute maniac away from his own home, preferably in an institution where there is a regular routine life, and where the surroundings are less likely to excite the patient. Strangers are preferable to relatives as attendants, as they are regarded by the patient as vested with greater authority, and, further, the sympathy and distress exhibited by relatives at the patient's sayings and doings are only an incentive to continue his morbid conduct. Experienced nurses and attendants are essential, as there is no form of insanity where tact is such a potent factor for good as in active mania. The patient should be placed in a small but quiet ward, and for the first few days he should be kept in bed. This may be at first difficult, but in a little while the patient begins to realize that he is to remain there. In many cases, provided there is proper supervision, it is advisable to allow the patient to sleep in a single room, as there is less chance of his becoming excited and disturbed. In suitable cases it is well to allow the patient to get up for two or three hours daily, and have a brisk walk in the open air, as there is no finer soporific or digestive stimulant than fresh air. A reasonable amount of liberty of movement is essential, and the use of strait-jackets and other forms of mechanical restraint should be cut down to a minimum and should only be employed for the protection of the patient and those around him. Restraint causes a feeling of "degradation, irritation, and restiveness," which can only have a deleterious effect on the course of the trouble. As Clouston says, "To restrain the mere outward muscular movements while the motor energy is all the while being generated in the brain convolutions is eminently unphysiological. Almost as well restrain the movements of the choreic or the convulsions of the tetanic patient by binding him down tightly, and expect a good result."

If the patient does not settle down after a few days in bed, it is well to endeavor to divert this excess of motor energy into useful work on a garden or farm, which produces a normal, healthy, muscular exhaustion, natural sleep, increased appetite, and an active digestion. One of the best sedatives for maniacal excitement is the

prolonged warm bath. The temperature should be kept at 88° F., and the patient may be kept in it for hours at a time, provided he is carefully watched, as there is a certain risk of collapse. The heart should always be examined before this treatment is resorted to, and during the bath the pulse should be taken at regular intervals. The old method of combining a cold application to the head with a warm bath has generally been abandoned, as it will greatly increase the risk of syncope. It will generally be found that after a couple of hours in the bath the patient will become drowsy, and he may then be removed to bed, or be allowed to sleep in the bath under careful supervision. The patient's meals also may be served in the bath. If the patient is so excited and restive that the bath treatment is impossible, the ordinary wet pack may be resorted to. If this treatment does not produce the desired effect in a fortnight it should be stopped, because if continued after that time it has a debilitating effect on the patient. Electrotherapy, needle baths, sprays, etc., are much advocated in this country and Europe, but Anderson passes them over as impracticable at the present time in Western Australia. In the acute delirious form Anderson asserts he has seen excellent results from injecting two or three pints of warm normal saline solution per rectum several times daily, and it is a routine treatment in all these cases in the Claremont Hospital for the Insane. If the patient is too ill to retain the enemata, two or three pints may be injected subcutaneously with equally good results. It helps to soothe and quiet the patient, and has a very beneficial effect on the soft running pulse.

Diet, fresh air, and exercise are the main factors in the treatment of acute mania. The diet should be generous but light; meat should be withheld during the early stages, but milk, eggs, custard, beef tea, etc., should be given in as large quantities as the patient will take and digest. Sometimes enormous quantities are required, and in these cases "we can hardly give too much." Often by peptonizing the food we can get the patient to assimilate more. The mental and physical exhaustion of these patients calls for an increased dietary from the normal, and as long as we do not produce any disturbance of the digestive tract we are not giving too much. Clouston speaks of patients who have taken a dozen eggs a day for three months running. Patients should be weighed weekly, and as long as the patient is losing weight the diet should be carefully attended to. A gain in weight with some mental improvement is a very hopeful sign. Alcohol as a general rule is contraindicated, but in a few cases it has a beneficial effect, especially if given hot to induce sleep.

In considering the medicinal treatment of acute mania, the main point to be remembered is that in this malady the cortical neurons are excessively active, and have reduced resistance, and this should guide us in the selection of our drugs. Our main object is to obtain at least one night's sleep in every three. This, however, is not always possible by means of fresh air, baths, and exercise, and therefore we are thrown back on hypnotics. It is advisable to avoid, as far as possible, the use of hypnotics in the treatment of excitement, as they tend to derange the stomach and lower the self-control of the patient, whom they stupefy. Probably one of the most satisfactory is paraldehyde. It is a fairly certain sleep-producer, does not depress the heart's action, and if not administered too often has little effect on the appetite and digestive system, and leaves very few after-effects. Two or three drachms should be given as the first dose, and if necessary, to be followed by one drachm every hour till sleep is obtained.

Sulphonal in doses up to 40 grains is also very efficacious, especially if given in a warm drink, which hastens its effect. It quiets the patient, but does not stupefy to the same extent as other sedatives on repeated administration. Its after-effects are practically *nil*, except that in a very few isolated cases, when used to great excess, it produces hematoporphyrinuria.

Potassium bromide and chloral hydrate

have many devotees, especially chloral, but the latter should never be exhibited when there are any symptoms of heart disease. Chloral is an excellent sleep-producer at night, and is best administered then. Potassium bromide certainly quiets the patient, but is not the hypnotic that chloral is. Both these drugs should not be administered for any length of time, as it is widely admitted that they have in time a very deleterious effect on the brain, besides disturbing the digestive system.

Opium preparations, in the majority of cases, are physiologically contraindicated, as they tend to reduce instead of increase the neuron resistance. Under their effect the weight is reduced and they stupefy rather than calm the patient, and furthermore, any gastrointestinal trouble present is usually increased by their use.

Hyoscine hydrobromide in very acute cases often acts like a charm, and may be given in doses from 1 to 30 grains, provided there is no cardiac lesion. Its repeated administration, however, is dangerous, and Anderson states he has seen more than one attack of pulmonary congestion follow its administration.

Veronal, trional, chloralamide, etc., are all useful hypnotics, especially after the acute stage is passed.

Chloretone has been found occasionally to be a satisfactory hypnotic and sedative in acute mania.

The use of thyroid extract in the treatment of mental diseases has of late been largely employed, and in all cases it is found that its effect is always to reduce the leucocytosis and the percentage of polymorphonuclear leucocytes. We have just seen that recovery is probably dependent on an increased leucocytosis and polymorph percentage, and therefore it is contraindicated in any case of excitement, as it is a direct cortical excitant. It should never be administered in any acute case. However, many patients, after an attack of acute mania, pass into a state of stupor, and it is for this secondary stupor that thyroid is of use. A course of thyroid for these cases sometimes settles the doubt in the physician's mind as to whether the patient is stuporous or whether dementia is setting in. The treatment, if due precautions are not taken, has a fair element of danger. The heart and lungs should be very carefully examined, as the risks are heart failure and the lighting up of a later phthisis. The patient should be kept in bed and given 15 grains on the first day, increasing the dose daily by 15 grains till 60 grains daily are given. This latter dose is continued for six or seven days, and then suddenly stopped. The patient must be kept strictly in bed for at least a week after the cessation of the treatment. After the first few days we look for a temperature and pulse reaction. Patients invariably lose weight under this treatment, but generally increase afterward. It is as well to exclude butcher meat and vegetables from the dietary whilst thyroid is being administered, as gastric disorders are very common. Anderson had a youth, a case of stupor following typhoid delirium, under his care, who increased 3½ inches in height and gained 3½ stone in weight in three months after a thyroid course, and who wakened up mentally in a most eminently satisfactory manner.

Many patients refuse food and require to be artificially fed. Forcible feeding has been brought prominently before the notice of the public of late by a certain section whose mental stability could quite easily be questioned. It is described as a cruel and brutal process. Those of us who have had long experience of tube feeding are agreed that this description is exaggerated and absurd. The patient, sane or insane, usually shows some discomfort at first, but this is soon gotten over, and after a little while experiences no unpleasantness. Anderson asserts he has not heard that the operation of washing out the stomach is a brutal operation.

An easy way to control the patient when there are male attendants is as follows: An attendant sits on the pillows on the bed, and the patient's head is placed between his legs. The two legs of the attendant are

passed over the corresponding shoulders of the patient, and the arms are passed underneath the attendant's legs. In this way a second attendant can control the arms of the patient, whilst his shoulders and head are easily managed by the first man. The patient's head should be tilted well forward, for in this position there is less chance of the end of the tube passing down into the larynx. An eructation of gas nearly always indicates that the tube has entered the stomach. A little water should always be poured down the tube before the food is administered in case the tube is in the trachea. A little water in the lungs does little harm, but the entrance of food into these organs would probably cause a septic pneumonia. For the same reason a little water should always be poured down after the food to clear the tube, and the tube firmly pinched whilst being withdrawn, lest any food lurking in the tube should gain access into the trachea.

Where the breath is fetid and offensive, and there is a poor appetite, great relief is often gained by washing out the stomach with a weak solution of potassium permanganate.

The collection of sordes on the lips, teeth, and in the mouth is best treated by mild antiseptic mouth-washes applied by means of swabs. An excellent wash for this purpose is as follows: Boracic acid, 1 ounce; lemon juice, 1 ounce; glycerin, 2 ounces; water, add 1 pint.

FURTHER EXPERIENCES WITH DUODENAL ULCER.

EINHORN, in the *Medical Record* of August 30, 1913, says that the indications for surgical intervention in duodenal ulcer may be put as follows:

1. Perforation requires immediate operation.

2. Recurrent profuse hemorrhages (hematemesis or melena, or both) endangering the life of the patient require a prophylactic interval operation.

3. Frequent small hemorrhages, not being influenced by rational treatment, leading to an appreciable degree of constant anemia, demand operative intervention.

4. Cases with constant continuous hypersecretion, accompanied by rational treatment, leading to an appreciable degree of constant anemia, demand operative intervention.

5. Severe pains, not influenced to a considerable extent by a repeated course of rational medical treatment, form a strong indication for operative measures.

ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF CHRONIC INFECTION OF THE PLEURA AND LUNGS.

FLOYD (*Boston Medical and Surgical Journal,* Nov. 13, 1913) notes that the immediate result, where the sound lung and the right heart cannot care for the demands made upon them, is a fatal one. More often than otherwise there is complete compensation. A moderate body of air in the pleural cavity may bring about more or less complete collapse of one or more lobes, a marked lessening of the flow of blood and lymph, and cessation of respiratory activity; this being followed by a lessening of absorption of toxic products.

The action of pleural effusion or sterile pyothorax on the lung is much the same as that produced by air compression. The accumulation of fluid within the chest, while much slower and thus less dangerous, may continue until pulmonary collapse is complete or until that point is reached where further encroachment upon the lung is prevented by fibroid consolidation or the restraining action of adhesions. The advent of one of these complications has often marked the beginning of the retrogression of an otherwise unfavorable infection.

Artificial pneumothorax is subject to the same limitations as are those diseases producing spontaneous compression within the thorax. Its successful use will, therefore, depend upon the choice of such thoracic conditions as allow of lung compression and the maintenance of a constantly compress-

ing force in that region which will directly bear upon the active lung process.

Unilateral cases of phthisis, relatively free from evidence of old pleuritis, recurrent pleurisy with effusion, and certain cases of lung abscess and bronchiectasis of not too long standing offer the greatest field for its clinical application. In pulmonary tuberculosis the range of the selection of cases is limited only by the ability of the patient to take the treatment and the object the operator has in view in giving it. If arrest or apparent cure of the disease is the ultimate object, then the treatment in most cases must be limited to those showing unilateral signs and without much fibroid tissue formation. If relief of one or more troublesome symptoms is the result sought, then any case of phthisis in which the heart action is good and the pleural cavity is not obliterated may be treated.

Recurrent pleurisy with effusion may probably be shortened in its course and the damaging action of pleural adhesions lessened by the withdrawal of the effusion and the compression of the lung lymph spaces by nitrogen. In abscess of the lung and bronchiectasis compression should be exerted from below upward to allow for drainage. The chronicity of such cases does not often allow of a complete arrest of the process, but frequently much can be done in modifying the symptoms.

Few incipient cases of phthisis have so far been reported as treated with pneumothorax. It would seem best for the present on account of the complications to which the nitrogen treatment is subject to exclude all early cases from the treatment, except such as are rapidly advancing under the best of sanatorium conditions. Early cases, however, may show remarkable improvement in a few weeks with a total loss of activity of the process in the lung as the result of artificial collapse.

The advanced case should never be refused treatment because the collapse of the lung is thought to be impossible without the effort being made. The condition of the heart should be such as to be able to care for a readjusted pulmonary circulation, and should be strong enough not to readily dilate should pleural shock occur. While the advanced unilateral case is considered the one of choice for artificial pneumothorax, the great majority of those treated will be bilateral. If the second lung shows a limited amount of apical involvement with little activity, the effect of the treatment may be beneficial to both lungs. When the second lung shows an active process even of limited extent the effect of the treatment may be to rapidly extend this process. The writer has seen one such case. A basial process in the least affected side nearly always precludes the use of nitrogen compression. The increased respiratory activity thrown upon the lower lobe of the untreated lung will tend to advance the disease in this location. Occasionally, subsequent to the arrest of a case of phthisis by artificial pneumothorax, the untreated lung may take on an active process after the cessation of treatment on the other side. In such instances if the first lung is able to carry on respiration the active lung may be compressed, provided this is done with care and the amount of compression slowly increased. Where tubercular pyothorax or effusion complicates phthisis the compression thus exerted should not be interfered with unless the fluid is invaded by pyogenic organisms. In such cases the withdrawal of the fluid and compression of the lung with nitrogen should first be tried before an open chronic thoracic sinus is established.

The selection of the point of injection is secondary in importance only to the selection of the case to be treated. In the routine case the lower dorsal surface offers the best location. The majority of cases of phthisis begin at the apices and advance downward, and in these cases the pressure will first be exerted upon that portion of the lung most recently invaded and which gives rise to the symptoms. The respiratory activity of the diseased lung will be most rapidly retarded by pressure exerted at the base. In this region also there is appar-

ently less danger of producing pleural shock than nearer to the root of the lung, and collapse of the lower lobe gives less distress from pressure. In cases of abscess of the lung, and bronchiectasis, which most commonly occur in the lower lobe, compression can also be most favorably exerted by thoracentesis in the lower part of the chest. In the selection of the point of injection the presence of adhesions must always be considered. Where physical examination shows the lung to readily expand with inspiration, with the descent of the lung borders and a resonant note on percussion, in most instances the lung will be free. *X*-ray examination is, however, all-important here to prevent failure in many cases in which physical signs give no indication of adhesions. No case should be undertaken without such an examination where it is possible to supplement auscultation and percussion with it. In this way frequently a few bands may be avoided which would otherwise negative all effort toward the successful production of a pneumothorax.

Collapse should be maintained until all evidence of active disease has disappeared from the lung for several weeks, and then the rate of reëxpansion should be a slow one. In recent pleurisy with effusion, an amount of nitrogen two-thirds in quantity of the amount of fluid withdrawn should be introduced, and this amount should be maintained within the chest. As the reaccumulating effusion diminishes in amount less and less compression will be necessary. In bronchiectasis the collapse of the lobe affected should be continued until adhesions prevent its reëxpansion.

In pulmonary tuberculosis complicated by a tubercular condition of the kidney the use of artificial pneumothorax is generally precluded on account of the danger of suppression of urine. If it is used at all it should be done with great care.

In the unilateral cases of active tuberculosis, not only relief of symptoms but arrest of the disease has been obtained. The time required to accomplish this has varied with the extent and activity of the disease treated. The tendency in most instances is to lengthen the interval of injections too rapidly and even stop them altogether before permanent arrest is assured. With artificial pneumothorax, as with other methods of treatment of tuberculosis, relapses occur and a renewal of the treatment may be necessary. Thus, after allowing the lung to reëxpand and to begin the formation of new adhesions, it may be quite difficult and may require considerable patience to again recollapse it. Nitrogen may have to be forced in under considerable water-pressure in order to separate the pleural surfaces even in those cases in which the first series of treatments have uniformly been carried out without difficulty. After establishing a moderate pneumothorax the lung generally collapses more rapidly from this point onward than with the first few injections. The same difficulty also arises in treating those patients who are not systematic in following up the treatment, and allow weeks to intervene between injections.

In a few cases of pulmonary tuberculosis, in which the pulmonary process has been extensive in one side and inactive in the other, during the series of injections renewed activity may occur at the margin of the old inactive process. In such cases continued compression merely aggravates the focus of the disease, and it is often wisest to desist entirely in the treatment, or at most to maintain only a moderate pneumothorax. Occasionally it has been possible to arrest the disease in one-half of the chest, and later, after allowing this lung to reëxpand, to compress the second, which has shown evidence of activity.

After some experience with the method of artificial pneumothorax in the treatment of pulmonary pneumothorax, one is struck with the relatively small number of those afflicted that are really suitable cases for this treatment. Well-marked or advanced strictly unilateral cases are not especially common even in large clinics for pulmonary tuberculosis, and some observers believe that such cases are always bilateral. If this

type of case is strictly adhered to the results obtained where the method is carried out conscientiously will be uniformly good, and the percentage of patients markedly improved or even arrested will be as large as 40 per cent or 50 per cent. If, on the other hand, as is the tendency with most men, almost any otherwise hopeless case in which satisfactory compression can be obtained is given a chance of obtaining relief, at least from persistent symptoms, the results will not be brilliant, and the author believes not more than 5 or 10 per cent possibly of such cases will be arrested. Artificial pneumothorax will be of real aid in the chronically recurring tubercular pleural effusion, and in some cases of bronchiectasis and pulmonary abscess in which the inflammatory conditions to be met are not too extensive. But even if this group of diseases may be benefited by the use of this method, its field in the treatment of diseases of the chest will still, he believes, be relatively a narrow one. It is most applicable where the patient is under the supervision of hospital or sanatorium management, and has failed to do well on older and well-established methods.

DIFFERENTIAL DIAGNOSIS OF THE APPENDIX BY AID OF THE ROENTGEN RAY.

QUIMBY (*New York Medical Journal*, Oct. 11, 1913) states that in the examination of 141 cases between May 1, 1913, and September 15, 1913, data were obtained which enabled him to classify the appendix radiographically. Of this number fifty patients had had laparotomies previous to the examination in which the appendix had been removed. Of the remainder, ninety per cent gave sufficient data to determine the position and condition of the appendix. The remaining ten per cent were those in whom the position of the cecum prohibited its thorough inspection.

A functionating appendix is capable of receiving and discharging feces. In the human being it must be regarded as a part of the intestines, and is therefore subject to the same laws. Accepting the fact of its power to receive and discharge material, and using this as a basis for an analysis of its condition, we can then turn to the known laws with regard to the motility of the colon. The colon has been found to respond to a natural mechanical stimulus which starts a peristaltic wave at intervals of about four hours each. In examining the patient for stasis he observed when the patient ingested a quantity of food or liquid the result was a decided forward movement of the bowel contents.

Accepting these facts of the normal four-hour period, modified by ingesting food, etc., we may expect the appendix to discharge its contents under similar conditions. Colonic peristalsis is inhibited at any point where a pathological abnormality occurs. As a rule, if there is any adhesion or constriction of the colon the peristaltic wave starts beyond this point at approximately normal periods.

The repeated attempts of the bowel to carry its contents past an obstruction usually result in dilatation and eventually loss of compensation, with disturbance of peristaltic function, and if, as physiologists believe, the normal wave of peristalsis originates in the appendix, then we may expect a disturbance of function to occur in it whenever obstructive phenomena of material degree are manifested.

A non-functionating appendix may be incapable of receiving material because of the obliteration of its canal. It may receive feces and only discharge part, retaining the residue for indefinite periods.

The non-functionating appendix is always pathological, either having changes within its walls or dense adhesions surrounding it. Chronic inflammatory processes always end in replacing the normal structures with fibrous connective tissue. In the appendix such a process involving the muscular coat ends in loss of peristaltic motility; moreover, should connective tissue form in the other layers of its structure, or adhesions extending from adjacent parts bind it down, we have a degeneration of the muscle fibre

caused by direct mechanical interference, disturbance of nutrition and reflex control, thereby causing diminished peristalsis. When this occurs feces with or without the normal food constituents may enter the appendix and be retained indefinitely.

The fixed appendix is usually adherent to the abdominal wall. Otherwise it is attached to the adjacent viscera that are held by adhesions which prevent displacement by manipulation. Palpation or pressure while examining under the fluoroscope enables one to readily determine the degree of fixation. A portion of the appendix may be fixed, especially the tip or end, as quite a number of the cases examined have an adherent tip and free shaft; this results in a movable appendix in which mobility may be deceptive when the tip of the appendix does not contain the opaque salts.

The soft tissues which compose the wall of the appendix, with a few exceptions, do not cast a shadow. The writer has had two cases in which the wall of the appendix was of sufficient density to cast a shadow which could readily be seen. The difficulty of reproducing the shadow of the soft tissue in half-tones prohibits demonstrating them in published radiographs. When the soft tissues can be seen in the radiograph they should be regarded as a deposit of scar tissue which has replaced the normal appendix and is evidently due to a chronic inflammation.

Routine practice consists in the examination of the entire alimentary canal, and extends over a period of from four to six days. As a rule the appendix is found to contain bismuth on the second day or at the end of the thirty-hour period. There are so many exceptions to this that we should not make it a practice to depend on the time factor. His practice is to expect the appendix to be filled with bismuth any time after six hours.

This routine examination elicits all the anomalies which occur and enables the examiner to report very definite findings, especially if sufficient time is taken with each case. The total time spent by the examiner with each patient is approximately five hours. The subject is examined from seven to twelve times. This may appear to be excessive, but a correct finding can only be made by close attention to detail and inspection of each segment of the alimentary canal as the opaque salt passes from mouth to anus. At times one is tempted and occasionally will be superficial in the inspection of a case that does not justify so much time and labor, but the valuable data obtained will reward the examiner and are a stimulus to do careful work.

The vast risk assumed by the examiner in the numerous fluoroscopic inspections that are demanded in following the bismuth meal, and especially in examining the right lower quadrant to determine the condition of the appendix and the presence of iliac kink, must always be considered.

One may determine the location of an appendix and state that it contains bismuth the usual length of time, and so conclude that it is the chronic type, and, being satisfied with this, may fail to prove the presence of adhesions or other abnormalities.

The exceptional number of appendices observed in the cases examined leads the writer to believe it is very rare for an appendix to become obliterated to such an extent as to prevent material from entering its canal.

In conclusion the author states that when there is chronic constipation due to delayed or inhibited peristalsis the appendix is usually diseased.

In the differential diagnosis of the appendix the *x*-ray is essential.

When the pathological condition of an appendix is suspected and there are few symptoms an *x*-ray finding is essential.

When the appendix is tied up in a mass of adhesions an accurate finding of the appendix enables the operator to rapidly locate it at operation.

Accurate determination of conditions typifying appendicitis should be made before operation.

When there are obscure symptoms in

the abdomen which cannot be traced to a definite organ, an *x*-ray examination of the appendix may show that it is adherent to some distant organ.

A METHOD OF OPERATING FOR RADICAL CURE OF INGUINAL HERNIA.

DAVIES (*British Medical Journal,* Sept. 20, 1913) says that the skin incision begins just internal to and above the spine of the pubis, and runs upward parallel to the fibers of the aponeurosis of the external oblique, from which the skin and subcutaneous tissue are raised. The pillars of the ring having been clearly defined, the external oblique is split up far enough to give sufficient room. The cord and structure covering the sac is seen lying in its place and must not be touched. The lower margin of the internal oblique is now seen and is retracted upward. The peritoneum (not the sac) is now opened *from the internal ring upward.* In almost all the cases operated upon the internal ring is very much approximated to the external by the dragging of the herniated gut, so that there is plenty of room above it, but, if there is not enough, the incision of peritoneum may be carried down on the outer side of the ring. When the abdominal cavity is opened the neck of the sac can now be seen from the inside. If omentum or other structures are adherent they can easily be separated or drawn out of the sac. The lower end of the incision through the peritoneum is now carried down to the neck of the sac and round it, so that the abdominal peritoneum is now entirely separated from the sac, just as the hand of a glove would be separated from a finger if the latter were cut off at its junction to the palm. The abdominal peritoneum is now closed with continuous suture as in any other abdominal operation.

The sac has now to be dealt with, and the neck may have to be carefully dissected off the fibrous ring spoken of. The left finger is passed down into the sac, which is drawn up round it with forceps by the assistant, and can easily be dissected or swabbed out of its bed with very little disturbance of surrounding tissues. The position of the deep epigastric artery must not be forgotten in dealing with the neck. The writer usually sutures the edge of the internal oblique down into the groove of Poupart's ligament as far as he is able. Whether this is of much real use he is not prepared to say. The edges of the external oblique are drawn together with a continuous mattress suture and overlapped or not according to the fancy of the operator. He thinks where the muscles are very lax, overlapping is certainly useful in making a thicker and stronger wall.

TREATMENT OF ANTEFLEXION.

DICKINSON (*American Journal of Obstetrics,* October, 1913) observes that the well-grounded prejudice against all intrauterine machinery falls away with three relatively recent developments or combinations. The stems are:

1. Uterine in location—not uterovaginal.
2. They are made without gutter, ledge, tube, joint, or other lodgment for secretion.
3. They are retained by simple means.

The principle of choice amongst intrauterine devices is this: For quick action of short duration, the springs (Chambers or Outerbridge) serve to bring on a menstrual period and are adapted to office use; but for long-continued effectiveness smooth stems are worn within the uterus comfortably and safely for months to correct flexion, infantilism, stenosis, and painful, sluggish, or absent menstrual function.

The large glass stem of Baldwin is held by a single heavy silver wire stitch passed through its single opening and anteroposteriorly through each lip of the cervix, as high as feasible. It is placed under anesthesia, usually after curetting. The curved, hollow silver stems of Dickinson, designed to be retained by their conical taper and cervical button, are used in office practice.

These effect whatever the various cutting operations accomplish more simply and

safely, without substituting one deformity for another, and with a somewhat higher percentage of cure of sterility and dysmenorrhea.

The more modern view of the fitness and utility of the stem has been summarized by Carstens. In the cases in which menstruation is scanty, occurs at long intervals, or is altogether absent, the uterus and ovaries are small and poorly developed. When this condition is found in a young girl the uterus is called infantile; in older women it is spoken of as a premature atrophy or premature menopause; and when the condition occurs after childbirth it is called superinvolution. When used in such cases the presence of the stem in the cervical canal irritates the uterus and causes it to contract in the effort to expel the foreign body. By these contractions the uterine muscle develops. The uterus is stimulated and congested, the nutrition of all the pelvic organs is increased, and the uterus and ovaries grow and develop.

The functions of the intrauterine stem are:

The development of the infantile uterus or ovaries, or both.

The redevelopment of the uterus and ovaries of premature menopause, obesity, etc.

The development of the congenitally defective muscle in the uterine wall at the flexing angle.

The straightening of the angle of extreme flexion.

The widening and enlargement of the narrowed internal os, giving better drainage.

The enlargement of the external os.

The relief of amenorrhea due to chronic sclerosis, premature menopause, obesity, etc.

The empirical relief of dysmenorrhea.

The cure of sterility—in cases in which the vaginal secretions are normal in reaction, in which gonorrheal infection and all pelvic inflammation has been excluded, and the husband's semen contains abundant, active spermatozoa of normal size and shape.

The greatest precaution must be used in excluding cases of inflammation of the tubes and ovaries, and pelvic inflammations in general, either of acute or chronic nature. The gonorrheal complement test may be used in excluding infections due to the diplococcus of Neisser. Latent cases of tubal or ovarian abscess may be lighted up by the introduction of a stem and serious consequences follow. In sterility cases the stem should not be used until spermatozoa have been found to be normal in all respects.

Anteflexion is usually infantilism and can only be improved by developing the uterus at its weak point. For these cases as well as for stenosis of the cervix the Dudley operation is often recommended. But the main seat of the trouble is at the internal os and not at the external, and the Dudley operation is a defective remedial measure as it does not keep the internal os open permanently or develop the flabby flexing angle, whereas the stem does. The Reynolds operation is adapted to short anterior vaginal walls, namely, to those of 1½ inches. This operation will lengthen the wall to 2½ inches, but it sometimes results in a sensitive depressed scar and should, therefore, be used only with fully developed indications.

Amenorrhea is frequently associated with obesity. In such cases the uterus and ovaries may be small and underdeveloped. These patients may become sterile and exhibit a variety of nervous symptoms. Medicine does not seem to help very much, but the introduction of a stem pessary and proper control of the diet may result in real benefit.

Dysmenorrhea may incapacitate a woman several days of each month. In these cases all congenital abnormalities, diseases of the tubes, ovaries, and pelvic inflammations of any kind must be eliminated before stem treatment can be considered. When the symptoms are due to anteflexion and stenosis of the cervix, treatment by a long intrauterine stem, if kept in long enough, will bring about a permanent good result in over 75 per cent of the cases.

Carstens has drawn attention to another class of cases helped by the stem. There are women who have had normal menstruation for ten or fifteen years and then begin to have pain which increases each month until the periods are severe. Unmarried women who have had to work for a living are most often affected. The cervix is small, hard, and atrophic. The fundus may not be changed, or it may be a little smaller than usual. The stem seems to check the process and restore the cervix to a more normal condition.

Norris has recently published the results of a series of 35 cases treated for dysmenorrhea and sterility. He claims 87½ per cent cure of dysmenorrhea, and 37½ per cent cure of sterility.

The patient is prepared as for any vaginal operation. A curetting outfit is made ready with two or three stems, cervix needles, and an 8- to 10-inch piece of No. 20 or 22 silver wire—the largest wire that will go into an Emmet cervix needle. The patient is anesthetized and placed on the table in the dorsal position. Vagina and cervix are thoroughly cleansed. The uterine canal is measured, and a stem is selected which is slightly shorter than the canal. Curetting may or may not be done as the first step; it is usually advisable. The cervix is pulled down with the tenaculum, and the os dilated. An Emmet cervix needle is threaded on the wire suture, which may be doubled. The free ends are fastened with a split shot. The needle and the wire suture are passed through the posterior lip of the cervix at the cervicovaginal junction. The stem should be tested to see whether it is cracked. The stem is threaded and pushed into the cervix one-fourth inch or more deeper than is needed. The suture is now passed through the anterior lip of the cervix and fastened with a second split shot. The wire suture is cut fairly close to the outer surface of the shot and the ends of the wire are turned over. Silkworm-gut may be used as a suture, but it is more apt to cut out.

A glass stem pessary of the Baldwin type may be retained indefinitely within the uterus without causing discomfort or trouble, provided it is of the proper size and is watched for the first few weeks.

The Dickinson hollow silver stem and the Outerbridge or Chambers spring may be used easily and effectively in office practice. The glass stem may be so used in some cases.

A stem pessary may cure amenorrhea that all other means fail to affect.

It may cure many cases of intractable dysmenorrhea where no pathological lesion or deformity is in evidence.

It may develop an infantile uterus, restore the organ of premature menopause or atrophy, and bring back superinvolution to a normal condition. Ovarian enlargement will take place *pari passu* with the uterine enlargement.

In a certain proportion of cases it will cure sterility. In these cases it is not to be used until the semen has been proved to contain numerous spermatozoa of normal shape and vigor.

All inflammatory conditions of the pelvic organs must be rigidly excluded.

The same aseptic precautions should be taken during the introduction of the stem as in other surgical operations.

ACUTE HEMORRHAGIC PANCREATITIS.

WHIPPLE and GOODPASTURE (*Surgery, Gynecology and Obstetrics,* November, 1913) as a result of a laboratory study of the subject come to certain conclusions of major import to the surgeon. The peritoneal exudate in cases of acute hemorrhagic pancreatitis is looked upon by the majority of surgeons as very poisonous. The peritoneal fluid may be very abundant and blood-tinged, containing tiny flakes of fibrin and the serous surfaces somewhat injected. This is the picture one may find in early acute peritonitis due to streptococci or allied organisms, and this similarity in appearance may explain the surgeon's fear of this peritoneal fluid. Surely no one can

claim that in the usual type of acute hemorrhagic pancreatitis the peritonitis is due to bacterial activity. At times bacteria can be cultivated from this fluid or from the fat necroses, but they are looked upon as secondary invaders—usually the colon group.

The peritonitis and peritoneal exudate result from the injury to the pancreatic parenchyma which frees various ferments in an active form. These ferments injure all tissues with which they come in contact, especially the epithelium of the peritoneal cavity and adjacent fat. This injury and the presence of ferments in this cavity call out a serous exudate, containing some fibrinogen and red blood cells. It is a well-known fact that the blood plasma is rich in antienzymes of many types, so there is no reason why this exudate should not tend to neutralize the various activated pancreatic enzymes. It will be recalled that the proteolytic enzyme of the pancreas is very active in digesting fibrin. The peritoneal exudate in acute pancreatitis usually contains small threads and clots of fibrin, and these remain hours in this fluid *in vitro* without the slightest change, strong evidence of complete neutralization of all proteolytic ferments. The lipase of the peritoneal exudate equals in amount the lipase of the blood serum except in the last stages of a fatal case, where we may imagine that the process of exudation and neutralization came to a standstill; under such circumstances the lipase of the peritoneal exudate may be many times normal. The mechanism of retrojection of bile due to a small calculus in the tip of the diverticulum (Opie) can explain only a very few cases. Ascending infection of the duct (Williams and Busch), often associated with gallstones in the common duct, is a possibility in many cases, and recently at autopsy the writers have seen a case in which there could be no reasonable doubt that such a direct ascending infection was responsible.

In the earlier paper from this laboratory (Whipple) it was pointed out that small focal necroses were often present in the pancreas examined at autopsy. These tiny focal necroses affect the acinar cells, and when numerous are usually associated with small fat necroses scattered over the surface of the pancreas. This focal injury of the parenchyma is usually self-limited and plays a rôle merely in chronic pancreatitis, but it is not difficult to imagine that under favorable circumstances such focal necroses with the escape of pancreatic ferments could lead to larger areas of necrosis, associated with hemorrhage and leading to a progressive necrosis and inflammation. They have observed a case in which scarcely any other explanation is applicable —hemorrhagic pancreatitis found at autopsy involved only the distal third of the organ, the gall and pancreatic ducts being normal, and focal necroses were present in all parts of the head and body. What determines the spread of this acute necrosis and escape of activated cell enzymes is not clear, but it is obvious that under certain conditions the pancreas is much more susceptible to injury. This has been demonstrated clearly by several workers, and it is known for example that injection of substances during active digestion will cause more profound pancreatic injury than exactly the same procedure during a fasting period. It is noteworthy in this connection that acute hemorrhagic pancreatitis occurs usually in persons in good health.

It is probable that the most rapid absorption is by means of the blood-vessels rather than by the lymphatics, and everything points to a fairly rapid exchange of fluids in the peritoneal cavity—rapid outpouring and absorption. In some experiments the authors tried to hasten this exchange of fluids in the peritoneum by introducing normal serum, and they can say with certainty that it was absorbed and did no harm. Whether it really did any great amount of good is less certain, but in principle the procedure seems logical and the results seemed favorable.

The peritoneal exudate in acute hemorrhagic pancreatitis contains no toxic substances. It is harmless when injected intravenously or intraperitoneally in large

amounts into normal dogs or those suffering from acute pancreatitis.

The ferments which escape from the injured pancreas are rapidly neutralized, and this peritoneal exudate usually is free from proteolytic ferments and contains the same amount of lipase as does the blood serum.

The hemorrhagic peritoneal exudate may be looked upon as having a neutralizing action and appears to benefit rather than injure dogs suffering with acute pancreatitis.

Dogs with acute hemorrhagic pancreatitis which are subjected to exploration and removal of peritoneal exudate will appear sicker than control dogs left undisturbed.

The pancreas can survive remarkable grades of injury, and this factor of safety should always be considered in drawing deductions from any surgical procedure. Its capability of repair seems greatest when the gland is left undisturbed in a closed abdomen.

TETANUS.

SHORT (*Bristol Medico-Chirurgical Journal,* September, 1913) says that in spite of the discouraging results of treatment in this disease, efforts are being made in a variety of directions to advance our knowledge and improve our methods of dealing with it.

Pathology.—It is well recognized now that the toxin of tetanus reaches the central nervous system by way of the nerves, not by the blood-stream. Interesting confirmation of this is afforded by the phenomenon of the so-called "cephalic type." Wounds of the seventh nerve area which give rise to tetanus are accompanied by facial paralysis from strangulation of the swollen nerve in the aqueduct of Fallopius.

The causation of postoperative tetanus has been the subject of an interesting paper by Richardson, who concludes that it arises in particular districts, especially in Northumberland, and under circumstances where the catgut and other surgical appliances could not possibly have been the agents conveying the infection. He believes that the symptoms are not due to tetanus bacilli, but to an intestinal infection with a similar organism which causes the "louping ill" in sheep, and which lies latent until it is brought into activity by the general upset of the operation. Such a theory must be very solacing to the unfortunate surgeon, but the explanation will not, of course, cover conditions in which there are several successive cases.

In the tropics, where intramuscular injections of quinine are often given for malaria, it has often been observed that tetanus has followed, in spite of the great care in boiling the needle and solution. Investigation shows that a few tetanus bacilli may lurk harmlessly in an aseptic wound in an animal, which, when an injection of quinine is given, even in a remote region, light up the disease in an active or even fatal form. Probably in the human cases after quinine there were already a few quiescent tetanus bacilli which had entered some forgotten abrasion, and which in some mysterious way were now activated. It is suggested here also that the bowel may be the lurking place, and in the tropics bacilli like tetanus often occur in the stools.

Prevention of Tetanus.—Although a thorough cleansing of the earth-infected wound when first seen probably helps to reduce the danger, yet it is very far from being a perfect protection. In several cases at the Bristol Royal Infirmary the wound was efficiently dealt with only a few hours after infliction, and nevertheless tetanus supervened. In America, therefore, doses of antitetanus serum are given to patients with an earth-infected wound as a routine, and several long series are reported in which no tetanus ever developed, but it is difficult to say that any of them would have manifested the disease apart from the prophylactic treatment. On the other hand, Jacobson and Pease mentioned nineteen cases in the literature (to which we can add another) in which tetanus came on in spite of the serum having been given. The great majority of them recovered, and the incu-

bation period was prolonged. Probably, therefore, there is real benefit. In experimental animals antitetanic serum is far more successful as a prophylactic than as a cure.

Treatment.—We shall not here refer to the obvious treatment, such as rest and seclusion, feeding, sedatives, cleansing of the wound, etc. A goodly number of cases would recover with but the simplest treatment. There is always a fair prospect of survival if the incubation period is over about sixteen days. Wounds of the leg are more favorable than those of other parts, because the toxins have to travel up a greater length of nerve.

Numerous attempts have been made to obtain better results with the antitoxin, but all statistics are much vitiated by two fallacies: first, that of picking out reports (usually of recovery) from the literature instead of quoting consecutive series; secondly, that of making no distinction between severe cases with a short incubation period and the milder ones which would recover anyhow.

Colossal doses (which are very expensive) are said to have cured 15 out of 20 cases (Jacobson and Pease). In each of these 300 to 500 Cc. were injected. It is by no means clear that they were severe cases.

Intracerebral injection is or ought to be abandoned. Of 88 collected cases (v. Graff) 80 per cent died; Sawamura reports another series with a 67-per-cent mortality. In several cases abscess of the brain has supervened.

Intraneural injection is probably more reliable than subcutaneous or intravenous, and gives much better results in rabbits (Sawamura).

Intraspinal injection is well spoken of, but definite evidence is not very conclusive. Rogers saved four cases out of seven by giving the antitoxin by all four routes—intraneural, intraspinal, intravenous and subcutaneous—to each patient. Hofmann reports 30 consecutive cases. In the first 13 only subcutaneous injections were given, and seven died (53.8 per cent). In the last 16 cases treated by intraspinal injection only two died; of these four were very severely affected. Ashurst treated five patients within twelve hours of the onset of symptoms by huge doses (3000 Cc.) of antitoxin given by all routes together, and only one died; he also saved four out of 11 cases in which the incubation period was less than ten days, but only one appears to have had severe symptoms. Altogether he saved 44 per cent of 23 cases, which is fairly good. At the Bristol Royal Infirmary, nine out of 31 have recovered. Jacobson and Pease, quoting from two hundred American hospital cases, say that of acute cases 17 per cent recover, and of chronic cases about 56 per cent.

Baccelli's Carbolic Treatment.—On paper the results obtained by this method infinitely surpass those of every other, but the statistics are compiled in a way that inspires distrust. Baccelli reports that 92 out of 94 "severe" cases recovered, and also 16 out of 38 "very severe" cases. Apparently there were no mild cases treated! The successes are isolated records of individual cures picked out of Italian journals, scores of authors contributing a case or two each.

The treatment is to inject a 3-per-cent solution of carbolic acid hypodermically, rising from 3-grain doses until 30 to 45 grains are given in twenty-four hours. Carboluria results, but it is to be neglected.

Magnesium Sulphate Treatment.—The injection of 2 or 3 Cc. of 25-per-cent solution of $MgSO_4$ into the spinal theca is a modern treatment of tetanus which has become rather popular. It is often successful in animals in quieting the spasms, but results are conflicting as to whether it saves lives. In the human subject the evidence is at present scanty. Phillips reports a consecutive series of seven patients in which four recovered. Out of 28 cases reported in the literature by various authors 16 recovered. The method is by no means free from risk—one patient died and another was saved only by artificial respiration. It would be wise to keep the patient's head up.

Other Methods.—In Russia good results are reported by Krokiewicz, who saved 13 out of 16 patients by giving injections of 10 grains of sheep's brain in saline, the idea being to take advantage of the affinity of the toxin for nervous matter so as to fix it harmlessly.

Summary.—It is probably well to give antitoxin both subcutaneously and by intraspinal injection, and, if the symptoms persist, to try the magnesium sulphate treatment. When circumstances do not favor a lumbar puncture, the very simple carbolic treatment is certainly worth a serious trial.

INJURIES TO SEMILUNAR CARTILAGES.

Among a number of papers upon the diagnosis and treatment of injuries to the knee-joint is one by Martin (*British Medical Journal,* Oct. 25, 1913) which, among other topics, takes up the question of injuries to the semilunar cartilages. He notes that up to the end of March last he has operated on 509 cases, of which only 38 were external. The external semilunar cartilage has a much looser connection than the internal, consequently, supposing it became engaged between the external condyle and the upper surface of the external tuberosity of the tibia, and is then dragged toward the center of the joint, stretching of its connections rather than splitting of its own substance would be more likely to result. In the case of the internal semilunar cartilage, which has a close connection with the internal lateral ligament and the capsule, a tear would be more likely to occur under the same circumstances. As a rule, the injury will be found in the anterior part of the semilunar cartilage, and therefore, on the joint being opened, is readily seen. When it is in the posterior part, unless care be exercised, it may be easily overlooked.

Probably the commonest type of torn semilunar cartilage is that in which there is a split which extends for a variable distance from before back. This split varies in position, being sometimes quite close to the attached border, and in others near the free edge; but in all cases there still remains a portion of cartilage retaining its normal attachments. When the accident is recent the edges of the tear are rough, and may even be blood-stained. In old cases, on the other hand, the edges of the tear become rounded, and cicatrization may even be noticed at either end. The detached portion, on opening the joint, may still occupy its normal position, and, unless careful scrutiny be made, may be overlooked. In the great majority of cases, however, it will be found displaced toward the center of the joint, and, under these circumstances, is easily recognized, being practically attached only to its anterior and posterior ends. Where the split is situated in the posterior part it can be demonstrated only when the anterior part of the cartilage is divided and strongly dragged upon, and, on this being done, the detached portion suddenly snaps forward.

In another type the tear extends from some point in the free edge across the cartilage, then forward or more rarely backward for a variable distance, thus giving rise to a pedunculated piece, which may readily become engaged between the condyle and the corresponding articular surface of the upper end of the tibia. This pedunculated piece after a time, and in consequence of being frequently ground between the articular surfaces, becomes rounded and of a discoid shape. In some examples its attachment to the rest of the cartilage becomes very slender, and, no doubt in consequence of further trauma, it may become completely detached and form a variety of loose body. In others the loose piece—possessing quite a wide arc of movement, but still retaining an attachment to the cartilage from which it has been torn—slips out of the joint and can readily be felt in front of the condyle. It is only under these circumstances that, previous to operation, the torn piece can be seen or felt. In a case recently operated upon the transverse tear did not extend through the whole

thickness, but only across the superficial fibers, which were also torn forward for an inch, thus forming a pedunculated piece, which at times gave rise to trouble.

Definite injury, amounting to fracture of the articular cartilage, may be caused by sudden extension movement of the knee while the detached piece of semilunar cartilage is engaged between the joint surfaces.

We have to depend upon the patient's story of the accident and the subsequent attacks of joint pain to guide us to a correct conclusion that a semilunar cartilage has been torn. The original accident may have occurred years previously, and we are often told that, since this took place, attacks of pain in the joint have occurred on more or less slight provocation, such, for instance, as walking on uneven ground, slipping on a greasy pavement, rising from the squatting position, etc. Seeing that the condition is most frequently met with in miners, the author then tells how the accident often occurs in the course of their occupation. A man in a squatting position is casting coals from one side into a tub; the body swinging round too far causes the knee to be forcibly twisted inward or outward. Again, while hewing in the squatting position the same thing may occur; or, again, while walking in the stooping position with the knee flexed he may get his foot fixed in a hole, the corresponding knee becoming twisted and the cartilage torn.

Football players are, next to coal miners, the most frequent sufferers from torn semilunar cartilage, and the accident is brought about, very often, in the action of swerving or dodging. Here, one foot being firmly fixed in the ground, in consequence no doubt of the long studs in the player's boot, and the body momentum going on, the knee on the same side becomes violently twisted. Again, in some cases, where the ball is about to be kicked, say with the right foot, but instead is missed or miskicked, the left foot being fixed in the ground and the body momentum swinging round, the same knee may become twisted and the cartilage torn. The author has never known the accident to result in consequence of a direct blow.

However the accident happens, the first symptom is very severe pain, which is often primarily felt over the whole joint. Later it becomes localized to a point at the inner or outer side, according as the inner or outer cartilage is injured, and may be so excruciating as to cause faintness and vomiting. Simultaneously, a click or a snap is felt in the same situation, and, as a rule, the patient falls to the ground. In the majority of cases the joint is incapable of full extension, and feels absolutely helpless. One is frequently told that it is only after the joint has been flexed and extended several times, probably by a fellowworker, that the movement of full extension is restored. When this takes place, the pain is very much lessened, and, in many cases, the patient is then able to hobble home. In a few hours marked swelling of the joint occurs, the result of effusion into it, and this, in consequence of treatment, disappears in the course of two or three weeks. In certain cases the inability to extend the joint following immediately on the accident persists for, may be, two or three weeks, or until the joint is opened and the torn piece of cartilage, which has slipped between the joint surfaces, has been removed. A marked feature of any case is that for some weeks after the accident a tender point remains at the inner or outer side of the patellar ligament, according as the internal or external semilunar cartilage has been injured. Once the accident has occurred, it is probable that subsequent attacks of joint pain and disability will occur, and these may result from very slight causes. The author has known such an attack to be brought on by catching the toes in the bedclothes or slipping on a banana skin: moreover, it may occur at very awkward times, as, for instance, while crossing a road or street in which there is a large amount of traffic.

Whereas after the primary accident pain and swelling are very prominent features, in subsequent attacks these often become

much less marked. Frequently an attack will consist of little more than experiencing pain at the inner side of the knee, and a click or snap in the same situation. The joint is then found to be locked in a more or less flexed position, and remains so until, while the knee is being moved, another click or snap is experienced, and it is found that full extension is possible. These attacks occur more or less frequently, and where they have been often experienced—owing, no doubt, to increased tolerance—may be followed by no effusion in the articulation, but invariably on examination a tender spot will be found at the inner side of the patellar tendon.

Perhaps the condition for which a torn semilunar cartilage is most frequently mistaken is osteoarthritis. Patients suffering from this disease, after twisting a knee, may complain of pain which was previously not noticed, or at least was not a marked feature, and the pain is often referred to the inner side of the joint, just in the position where it is present in the case of a true tear of the semilunar cartilage. Moreover, inability to extend the joint may be a prominent feature, and a tender point at the inner side of the joint is frequently demonstrable. As a rule, however, it is comparatively easy to distinguish between the two if sufficient care be taken. In the case of the osteoarthritis, the patient is beyond middle life, there is crepitation on moving the joint, and there may be actual lipping of the articular ends of the bones. Again, the other knee may present definite evidences of the disease.

With regard to the treatment of torn semilunar cartilage, the question arises as to whether in a recent case healing may take place with appropriate measures. That cicatrization may and does take place is shown in several specimens which the writer has removed, and in which scar tissue has been seen at either end of the split. In one, where a complete transverse tear had occurred, complete healing has actually taken place. Complete healing, of course, can take place in a recent case only if the edges of the tear are kept in accurate apposition over a long period; and, inasmuch as it is impossible to be certain that apposition in a given patient has been secured, a good result will be problematical and impossible to foretell. However, if your patient be in easy circumstances, it is certainly worth while, after getting rid of the effusion, to thoroughly immobilize the articulation in a plaster-of-Paris splint, extending from the toes to the upper part of the thigh. After this has been in position for two months it may be removed and cautious movements commenced.

In the case of patients who do not need to earn their living by hard manual work, and who are content to give up such strenuous games as football, hockey, and cricket, or who are unwilling to undergo operative measures, treatment such as just recommended may be undertaken.

Where a tear has resulted some time previously, there will probably have been more or less numerous attacks of joint pain, and we may safely assume that in each attack the damage to the torn cartilage has increased. Under these circumstances no good purpose is secured by prolonged rest, and the best treatment then in patients who refuse operation is, after getting rid of all swelling and pain, to prevent rotatory movements by wearing a well-fitting knee brace. Such a brace, to be effective, is necessarily somewhat cumbersome and clumsy, but with it, providing he is content to give up violent forms of exercise, subsequent attacks may be completely prevented.

Where the patient is engaged in manual labor, and a perfectly sound joint is consequently necessary, operative treatment must be recommended—of course, in the absence of intercurrent disease. This treatment ought also to be recommended in the case of a man or woman who is desirous of still taking part in open-air sports, such as football, cricket, hockey, riding, etc. Again, where inability to fully extend the knee persists, the same treatment must be carried out.

The question now arises as to the time

when one should operate. Personally, the author always waits a week or ten days after an attack. He does this because by that time the devitalizing effect of the injury will have passed off. Previous to and during operation, the most rigid antiseptic precautions are necessary. The author does not use dry sterilization, but relies mostly on chemicals. If possible, he keeps the patient in bed for thirty-six hours previously, and at the beginning of this period commences preparations. The whole of the skin of the leg and thigh is shaved, thoroughly washed with spirit-soap and hot water, then with turpentine, and finally with methylated spirit. It is then thoroughly rubbed over with swabs of cotton-wool wrung out of 1-in-1000 corrosive sublimate solution, and finally is covered with a compress wrung out in the same solution, extending from the middle of the thigh to the middle of the leg; this compress is covered by mackintosh and secured by a bandage. Twenty-four hours later the thigh and leg are again washed with 1-in-1000 corrosive solution and a compress wrung out in the same solution reapplied. When the patient is anesthetized a tourniquet is applied round the thigh, and after the compress is removed the operation area is thoroughly washed with a solution of 1-in-20 carbolic acid; the knee is then thoroughly flexed and kept in this position by an assistant, who stands opposite to him.

He uses a transverse incision, commencing, in the case of the internal cartilage, at the inner border of the patellar tendon and extending backward for a distance of about 2 inches in the line of the articulation. The author is firmly convinced that this incision gives the best exposure, and if the internal lateral ligament be not cut across the after-stability of the joint is not interfered with. Some years ago, in the practice of another surgeon where this precaution was not observed, a somewhat unstable joint resulted in which there was a certain amount of abnormal lateral mobility.

On dividing the skin and subcutaneous tissue a strong aponeurosis is exposed, which is also divided in the length of the incision; then the capsule and subjacent synovial membrane is opened and the interior of the joint exposed.

If the split or tear be situated in the anterior part of the semilunar cartilage it will be quickly recognized, particularly if the torn portion be displaced toward the center of the joint. In a few cases, and even where the tear has been fairly extensive at the time, on the joint being opened the parts seem in their normal condition, and it is only on careful scrutiny that the line of tear is discovered.

Where the damage is in the posterior part of the cartilage, in a large number of cases it will be impossible to demonstrate it until the anterior extremity of the cartilage is divided and strongly pulled upon, when the torn portion will suddenly snap forward from behind the condyle, and it will then be found that, until this has again been reduced into its normal position or has been removed, the joint is incapable of being fully extended. If this snapping forward be once witnessed, it will readily be appreciated that at the time of the accident an audible snap or click will occur, and it will also explain the subsequent signs and symptoms. On three occasions at least he has had to open the joint a second time, where a posterior split existed and had been overlooked at the previous operation. If the anterior extremity of the cartilage had been divided and strongly pulled upon, this mishap would not have occurred. The author aims at removing the entire cartilage, and in the large majority of cases this is quite an easy procedure. After the cartilage is removed the capsule and synovial membrane are sutured in one layer with thin catgut; the incision in the aponeurosis is similarly dealt with, and the edges of the skin are brought together with a subcuticular suture. An antiseptic dressing, consisting of gauze wrung out of a solution of corrosive sublimate in methylated spirit (1 in 1000) is then applied, and over this a thick layer of wood-wool wadding, both being kept in place by a domette

bandage. He uses no splint in the after-treatment, and encourages the patient to move his knee, as far as the dressing will allow him, as soon and as freely as he can. During the operation neither the assistant's nor Martin's own fingers come in contact with the wound, all manipulations being carried out with instruments, and, needless to say, india-rubber gloves are worn by operator, assistant, and nurse.

After the operation, for the first two nights, a rise in temperature, to the extent of 1° or even 2°, need cause no alarm, and during the same period severe pain may be experienced, sufficiently bad to necessitate one or two hypodermic injections of morphine. Beyond this the convalescence of the patient is quite straightforward, and at the end of a week the dressing is taken down, and the subcuticular suture is removed. There is no difficulty with after-stiffness, and even at the end of ten days the majority of the patients are able to fully flex the knee and to commence to walk about without any support.

The operation is a very successful one, and it is extremely rare for patients to be otherwise than completely relieved by it.

In several cases the writer has removed both internal semilunar cartilages with an interval varying from six weeks to five and a half years between the two operations. In one case both internal cartilages were removed at the same operation; in a further case both cartilages, in the same knee, were removed at the same operation, and in three cases both cartilages in one knee were removed; in two cases both cartilages in one knee were removed in two operations, with an interval varying from eight months to three years between the two operations. All these patients did well.

REVIEWS.

PROTEIN SPLIT PRODUCTS IN RELATION TO IMMUNITY AND DISEASE. By Victor C. Vaughan, M.D., LL.D., Victor C. Vaughan, Jr., M.D., A.B., and J. Walter Vaughan, M.D., A.B. Illustrated. Lea & Febiger, Philadelphia and New York, 1913. 474 pages and index.

Within an incredibly brief period many most interesting, most far-reaching and consequently most important phases of organic chemistry have been developed. The most significant feature is the inexhaustibility of the lode. No sooner is one inquiry satisfactorily answered than another arises; the second often more obscure and more difficult to answer than that from which it arose. What the cell unit was to the study of morphology and the establishment of cell life as the basis of histologic and pathologic processes, the protein molecule has become to the still more intricate and far-reaching aspects of chemistry, physiological and pathological. The cell, as the unit of life, has been deposed; chemists have blasted so gross a structure into fragments, the king among which is the protein molecule. Attacked from many sides this molecule has reluctantly yielded fact after fact carefully gleaned from a boundless maze of theory and speculation. Chemists have written with fair clearness the life histories of many relatively simple carbon compounds, and have proven some of them to be a little more than incidents in the complicated process of metabolism. The immeasurably more complex protein molecule, in which nitrogen plays so important a part, is now to be regarded the unit of life, and, while living, manifests its existence by ceaseless change; increments by which it lives are prepared for its utilization by ferments of its own production; excrements derived from it are powerful bane and antidote.

The work of Professor Vaughan and his collaborators embraces a comprehensive study of the poisonous section of this highly complex structure. According to the authors the poisonous unit is the primary group of all protein molecules which, entire, differ from one another in the secondary and tertiary groups

only. When the primary poisonous part is satisfied by combination with other groups its poisonous activity is lost, to reappear upon dissociation. The satellite groups establish such specificity for proteins as the latter bodies possess. Professor Vaughan alone, and by collaboration, has devoted years to fruitful investigation of the toxic constituent of the protein molecule and to the relations of this body to various vital processes particularly in disease, and more especially with regard to the relation of certain bacteria to morbid processes. Bacteria are dealt with as particulate proteins, and their action studied from the viewpoint that each contains a poisonous molecule, and that morbid processes represent efforts on the part of the animal body to elaborate ferments and to establish new combinations through the activity of which the poisonous action of the noxious protein may be allayed or averted.

It is not possible to analyze in detail the evidence presented in the fifteen chapters in which the subject is most entertainingly and logically presented. The first chapter, introductory in form, states convictions to establish which the remainder of the volume is largely devoted. The second chapter treats of certain aspects of technique. The third and fourth chapters deal with the protein poisons of the bacterial cell. In the fifth chapter the authors discuss the cleavage of proteins, and in the sixth their action on animals. Chapter seven is a study in active immunity, and is followed by chapters eight, nine and ten devoted to the cleavage products of the tubercle bacillus, anthrax bacillus, and the pneumococcus respectively. Chapter eleven is largely an exposition of the authors' views with regard to protein sensitization or anaphylaxis, terms used synonymously with hypersensitiveness and allergie. In this part is found a most interesting discussion of accepted theories concerning anaphylaxis and a statement of opinions held by the writers not in harmony with those generally maintained. Conspicuous among these is their contention that sensitization is not accomplished through influences exerted by poisonous groups of protein molecules. The specificity of proteins and the specificity of sensitization do not lie in the toxicity of the poisonous group, but, as already stated, in the secondary groups. Sensitizing groups lack the stability of the toxic group, are highly labile, and easily dissociated. The chapter contains a warning against the indiscriminate use of vaccines of diverse origin and composition; the authors believe that entirely satisfactory results cannot be obtained until we secure sensitizers free from poisonous constituents. As is well known, Professor Vaughan's view is that sensitization is the production of a specific proteolytic ferment which acts upon the protein that brings it into existence and upon no other, and that when the protein is again injected the ferment liberates the toxic molecule to which the symptoms are due. Chapter thirteen is devoted to protein fever and contains valuable additions to our knowledge with regard to the production of fever and the relation of proteins to its phenomena. Chapters fourteen (contributed by J. Walter Vaughan) and fifteen are devoted to the specific ferments of the cancer cell and to the phenomena of the infection respectively. While we are laying great stress on means directed toward the suppression of such diseases as tuberculosis the authors believe that nature is slowly immunizing the generations; this is probably true of every infectious disease sufficiently prevalent to reach a large part of any race during the reproductive years of individual members, assuming, of course, that any considerable number survive.

While the volume is largely devoted to and contains a record of vast and important work done by the authors, they have not hesitated to draw upon literature and, even when not agreeing with the views of others, have not hesitated frankly to set them forth in what appears to be an entirely fair and dispassionate manner. The volume is free from pedantry, from painfully complex formulæ, and from stilted exposition of calculus, particularly calculus of finite differences, that so frequently make writings

of modern chemists and physicists too strenuous mental gymnastics for the average reader. Any intelligent physician should fully comprehend the meaning, and none will read carefully and studiously without feeling that he has been abundantly repaid for the energy so expended.

W. M. L. C.

MODERN OPHTHALMOLOGY. A Practical Treatise on the Anatomy, Physiology and Diseases of the Eye. By James Moores Ball, M.D., LL.D. Third Edition, Revised and Enlarged, with 445 Illustrations in the Text, and Numerous Figures on 24 Colored Plates. Philadelphia: F. A. Davis Company, 1913.

The first edition of this book, which appeared ten years ago, was the product of the labors of a number of authors, the major portion of the book having been written by Dr. Ball, "Anomalies of the Muscular Apparatus" by Dr. Zentmayer, "Ocular Symptoms of Nervous Diseases" by Dr. Knipe, "Diseases of the Orbit" by Dr. Shoemaker, "Errors of Refraction" by Dr. Krall, "Hygiene of the Eyes" by Dr. Goldberg, and "Methods Employed in the Microscopic Examination of the Eyes" by Dr. Fischer. In the preparation of the sections devoted to dermatologic diseases of the eyelids much assistance was rendered by Dr. Grindon and Dr. Ohmann-Dumesnil.

In the present edition the chapter on refraction of the eye has been carefully revised by the author, with full acknowledgment of Dr. Krall's work in his former editions. A new chapter, and a very timely one, on "The Legal Relations of Ophthalmology," has been written by Dr. Thomas H. Shastid. Dr. Zentmayer, Dr. Shoemaker, and Dr. Knipe have revised their chapters contributed to the first and second editions, and the hygiene of the eye and the methods employed in the microscopic examination of the eye are credited to Drs. Goldberg and Fischer. Therefore the present edition, like the two which preceded it, continues to be a work of composite authorship.

Of the various chapters just named all give evidence of careful preparation. Dr. Zentmayer's contribution is brief but written with characteristic excellence, and Dr. Shoemaker's chapter is thorough and satisfactory. Naturally, in a book which covers so much ground there is some repetition, and often one is surprised at the amount of space given to comparatively unimportant topics, and the brevity with which exceedingly important matters are dismissed. In this day it is a little surprising to find "trephining of the sclera," as it is called, including Elliot's operation, described in three paragraphs covering not more than one-third of the page. The comment is that "Elliot's operation seems to possess distinct advantages over other methods of trephining." The description of the operation is totally inadequate. Perhaps not unnaturally, sympathectomy receives extended attention, but we doubt very much whether it is worth it. Surely it is an operation which has ceased to appeal to ophthalmic surgeons, at least in so far as the treatment of glaucoma is concerned. Although the pathological histology of sympathetic ophthalmia is described, Fuchs's elaborate and important researches receive little consideration, and none at all by name. There is no mention of the treatment of this disease with blood serum or with salvarsan, certainly remedies upon which some comment should have been incorporated. Practically no attention has been paid, except in indirect mention, to the relationship of various local septic areas to the development of uveal tract diseases, notably iridocyclitis or uveitis—that is, oral sepsis, accessory sinus disease, tonsillar infections, etc. Indeed, the author thinks that carious teeth, alveolar abscess, and suppurative rhinitis are rare causes of iritis, and yet recent investigations abroad and to some extent in this country would indicate that a very important part of the treatment of uveal tract disease consists in the investigation of these probably frequent etiological factors. So, too, one would think that greater attention should be given to the therapeutic indications for bacterins, for example, in the treatment of gonorrheal iritis and infected ulcers of the cornea.

Now because of these comments it must not be assumed that this book does not give

evidence of much research and a large familiarity with ophthalmic literature. It contains an enormous amount of information which would be more readily available if, in places at least, the editorship had been more strict. A very important and happy feature of this volume, as well as of its predecessors, is the richness of its illustrations. Dr. Ball has taken great pains to gather together a series of important pictures of the fundus oculi reproduced from water colors by Miss Margaretta Washington, and the black-and-white illustrations are for the most part well reproduced and are satisfactory illustrations of the various subjects which they are intended to elucidate.

DYSENTERIES. Their Differentiation and Treatment. By Leonard Rogers, M.D., F.R.C.P., F.R.S. The Oxford University Press, New York, 1913. Price $3.75.

With the exception of some of the men in the Medical Corps attached to the various Services of the United States, no one has done more to advance our knowledge of the treatment of various tropical diseases than Dr. Rogers, and from his pen we have on a number of occasions published important communications amongst the original articles of the THERAPEUTIC GAZETTE. As the author points out in the present volume, much progress has been made in the last decade in the differentiation of the dysenteries. This differentiation is essential if our treatment is to be rational, since certain forms of treatment which are almost specific in one type of dysentery have proved quite useless in other types. After some historical considerations in the first chapter the author deals with the epidemiology of dysentery, and then takes up the various types and symptoms of dysentery with particular reference to their cause, to their application, and to the methods of treatment which should be instituted. When we recall the fact that that most valuable modification of the ipecac treatment of amebic dysentery, namely, the hypodermic injection of emetine, was introduced by Dr. Rogers we begin to gain some insight into his ability to deal with this important subject thoroughly, the more so as he has been in charge of the wards in which cholera and dysentery are treated in the Calcutta Medical College Hospital, and also fills the office of Professor of Pathology. Our readers are familiar with his method of treating simple amebic abscess of the liver by aspiration and the injection of quinine, because on a number of occasions we have called their attention to this important matter. Dr. Rogers' book upon the dysenteries is, to medical literature, what our own Craig's book is in connection with malarial infection, and side by side with Craig's book upon the parasitic ameba of man reflects credit upon the English-speaking medical world in the investigation and treatment of a large class of tropical diseases.

DIAGNOSIS IN THE OFFICE AND AT THE BEDSIDE. By H. A. Hare, M.D., B.Sc. Seventh Edition, Thoroughly Revised. Illustrated. Lea & Febiger, Philadelphia and New York, 1914. Price $4.00.

The scope and object of this book is best described by the following quotation from the preface:

"This volume is essentially devoted to a plan whereby a recognition of symptoms will lead the physician to a diagnosis. To accomplish this the symptoms used in diagnosis are discussed first, and their application to determine the character of the disease follows. Thus, instead of describing locomotor ataxia or myelitis, there will be found in the chapter on the Feet and Legs a discussion of the various forms of loss of power in the legs, so that the physician who is consulted by a paraplegic patient will be able readily to reach a diagnosis. In the chapter on Cough and Expectoration it is pointed out that hemoptysis may be due not only to pulmonary tuberculosis, but also to cardiac valvular disease, to pulmonary infarction, thoracic aneurysm, bronchiectasis and purpura, and these facts lead to differentiation. So, too, in the chapter on Vomiting, its significance, both local and remote, is discussed. In other words, this book is written upon the plan which is actually followed in practice, namely, the upbuilding of a diagnosis by grouping the

symptoms. Under the older methods the reverse of this plan was followed, whereby the physician was compelled to make a suppositious diagnosis and then to turn to his reference book to compare the symptoms of his patient with the text dealing with the supposed disease. If the description failed to coincide with the symptoms of his case he was forced to make another guess and read another article.

"Laboratory diagnosis is now so highly developed that it requires special volumes for its description. As there are several excellent books of this character, the author has omitted laboratory methods from his text in order that his intention of considering symptoms as they appear in the office and at the bedside may be the better carried out."

DISEASES OF THE HEART. By James Mackenzie, M.D., F.R.C.P., LL.D. Third Edition. The Oxford University Press, New York, 1913. Price $5.50.

Few men have done more to increase our knowledge of the physiology and pathology of the living heart than Dr. Mackenzie. In the English-speaking world he stands as only one or two others stand in the German-speaking world. By means of instruments of precision and conscientious investigation he has thrown light upon a large number of obscure cardiac conditions which autopsy could not reveal because function had ceased.

The present edition, appearing four years after the second, has been largely rewritten, because during these four years very extraordinary advances have been made and the value of the electrocardiograph in the hands of the special investigator has been greatly emphasized. Then, too, by the aid of various polygraphs the bearing of heart manifestations on the question of heart failure, present and remote, in its bearing upon prognosis and treatment have become more definite; and lastly, opportunities have been developed by which the action of cardiac remedies can be carefully studied in man in a manner which, hitherto, had been confined almost solely to animals. In other words, during the last decade our opportunities of studying the functional activity of diseased hearts has been greatly increased, and the methods of treating such grave conditions as auricular fibrillation and auricular flutter can now be carried out in an intelligent manner.

Like most pioneers in a new field of investigation, Dr. Mackenzie makes statements to which many of his professional colleagues will probably take exception. His very positive views concerning certain conditions which he has studied are constantly manifested in the text, but, after all, this is what one wants when he is seeking to obtain the views of a physician who has devoted many years to the accurate study of cardiac affections. We are interested to know that he apparently places considerable reliance upon the use of the ordinary sphygmograph, which some years ago was condemned by a well-known American writer upon physical diagnosis.

Most of our readers will probably be chiefly interested in the illustrations and text which cover the matter of the influence of drugs upon cardiac action in health and disease.

The book is printed in large type with wide spacing and cannot fail to maintain its reputation developed by the earlier conditions, nor can it fail to increase the reputation of its learned and skilful author, who apparently possesses the brilliant qualities of the pioneer combined with the excellent judgment of the trained investigator.

A TREATISE ON DISEASES OF THE SKIN. For the Use of Advanced Students and Practitioners. By Henry W. Stelwagon, M.D., LL.D. Seventh Edition, Thoroughly Revised. The W. B. Saunders Co., Philadelphia, 1914. Price $6.00.

Each succeeding edition of Dr. Stelwagon's book has brought forth surprise that so large a volume dealing with so special a subject should find so large a sale year after year. This seventh edition follows only twelve years after the first one appeared. The author points out in his Preface that there have been a number of advances made in the knowledge of diseases

of the skin in the four years since the sixth edition appeared, notably in connection with syphilis, leprosy, pellagra, ringworm, and tropical affections. Practically all of these topics were well covered in the sixth edition, but have been more thoroughly and completely discussed in the present volume, which covers 1250 pages. As with previous editions, particular attention has been paid to treatment and illustrations, and about forty new cuts have been introduced dealing with a wide range of skin lesions. To save space quite a good deal of the old text has been eliminated. Indeed, there have been so many changes that the author tells us that it has been necessary to reset the type of the book. As with previous editions, care is taken to refer the reader to important papers dealing with the topics considered, there being not infrequently six and eight references at the foot of a page.

Stelwagon's book on the Skin has already attained such a permanent place in medical literature that it is only necessary to call attention to the appearance of the new edition and not necessary to go into details as to its minute arrangement. Recognized by the profession as one of the best teachers of this subject at the bedside and in the clinic, and also as one of the most successful practitioners in dermatology in this country, the character of the text prepared by Dr. Stelwagon is guaranteed as to quality.

ELECTRICITY IN DISEASES OF THE EYE, EAR, NOSE AND THROAT. By W. Franklin Coleman, M.D., M.R.C.S. Illustrated. The Courier-Herald Press, Chicago, 1912.

Although this book was published in 1912, it has only just been received for review. It is needless to say that its author is an enthusiast as to the value of electricity in the conditions which he describes. The opening pages are devoted to the elementary physics of electricity, the discussion of various forms of electrotherapeutic apparatus, and finally the author's own equipment. The second part deals with the therapeutic use of electricity and the technique of its application, and deals not only with the various forms of electricity, as commonly employed, but with phototherapy, the *x*-ray, and ozone induced by electrical discharge. The remaining part of the book deals more closely with the use of electricity in diseases of the eye, ear, nose, and throat, and covers its employment in a wide range of conditions. The addition of the last chapter, entitled "Reports of Some Cases Under Electrical Treatment in the Author's Own Office During the Last Month," is, possibly, subject to ethical criticism, but nevertheless adds to the personal interest of the volume. There is an author's index as well as an ordinary index, and nearly two pages are devoted to bibliographical references, although this list only gives the names of the journals and not specific numbers containing definite articles.

There can be no question that electrotherapeutics has probably a larger field in the treatment of diseases of the eye, ear, nose and throat than it has in almost any other department of medicine in the sense that it is qualified to produce better results. Those who treat these affections will do well to possess themselves of Dr. Coleman's interesting volume.

THE PRACTITIONER'S PRACTICAL PRESCRIBER. By D. M. Macdonald, M.D. The Oxford University Press, New York, 1913. Price $1.50.

This is a small manual which can be carried in the side pocket of the sack coat and which gives the treatment of various diseases, arranged in alphabetical form, both as to prescription and as to directive advice. Some of the diseases which are included are so rare that in another edition they might be well excluded in order that more important and commonly-met-with maladies might be discussed, as, for example, Raynaud's disease. Part of the text is devoted to a dose list in apothecaries' weights. There is a short chapter upon some points in prescribing and another upon incompatibilities. There is also a series of pages devoted to the treatment of what might be called emergency cases, such as abortion and angina pectoris, and one

part is devoted to the ailments which are to be relieved by resort to suitable spas and climates. A page is devoted to vaccines, and a little over two pages to the varieties of local anesthesia.

A Text-book of Histology. By Frederick R. Bailey, A.M., M.D. Fourth Edition, Profusely Illustrated. William Wood & Co., New York, 1913. Price $3.50.

The author's aim in the preparation of the first edition was to prepare a volume which would serve as a text-book for students undergoing instruction in the histological laboratory. The general plan and scope of the first edition has been adhered to in the preparation of the fourth. Some of the text has been rewritten and all of it thoroughly revised, and a considerable number of illustrations have been introduced. Dr. Oliver S. Strong, who wrote the chapter on the nervous system for the third edition, has revised this chapter in the present issue with copious illustrations. The illustrations are unusually good and should prove of great assistance to the student. Details as to technique and as to the appearance of the tissues under the microscope are also excellent. A small error is the incorrect spelling of the name Piersol, to whom credit is given for the illustration of the design of the kidney.

Practical Prescribing. With Clinical Notes. By Arthur H. Prichard, M.R.C.S., L.R.C.P. The Oxford University Press, New York, 1913. Price $2.00.

The writer has endeavored to supply information likely to be of service to those who are studying clinical medicine, and more especially to those who wish to obtain practical knowledge of prescribing. The drugs of the British Pharmacopœia are adhered to in most of the prescriptions, although in some instances preparations of the Pharmaceutical Codex are introduced. The text is prepared in rather an unusual form. For example, in considering acute gout a brief history of an individual case is published. Under it in one column is placed such a prescription as the author thinks wise in the treatment of such a patient, and in the second column the reasons for the use of the drugs named in the prescription are printed with additional advice as to diet, and this continues on day after day up to the fourteenth day, and is followed by still more text dealing with a description of how various remedies are known to or supposed to do good in this affection, all of which tends to make the text rational and interesting as well as practical. The book is at present so small as to be unable to cover anything more than a limited field, but so far as it goes it is an excellent clinical manual. Its popularity in this country can only be arrested by the failure to include the preparations of the United States Pharmacopœia.

State Board Questions and Answers. Third Edition, Thoroughly Revised. By R. Max Goepp, M.D. The W. B. Saunders Co., Philadelphia, 1913. Cloth, $4.00.

Recent graduates, as well as old ones, dread nothing more than the appearance before a State Board of Medical Examiners, since such an examination in importance, so far as their opportunity to earn a living is concerned, fully equals the importance of the examination which gives them their degree. This is the most thorough and exhaustive book dealing with this subject that has appeared. The Index alone covers 54 pages in fine type. The questions are asked in heavy-faced type and the answer follows in smaller type. All departments of medicine are included. The book can be well used not only for the purpose of preparing for a State Board Examination, but also for quick reference in the office in all departments of medical practice as well as in the fundamental branches.

The Diagnosis of Bacteria and Blood Parasites. By E. P. Minett, M.B., D.P.H. Second Edition. Paul B. Hoeber, New York, 1913. Price $1.00.

Dr. Minett is the Assistant Government Medical Officer of Health and Bacteriologist in British Guiana, and previously was attached to a number of the large London hospitals as bacteriologist. He has attempted in a tiny volume of eighty pages, including the index, to cover a large and

important field, and in his attempt has succeeded admirably, since he only endeavors to give a brief and clear description of how various parasites are to be discovered and how their peculiarities are to be recognized. A competent bacteriologist would not be willing to have no other book but this as a guide, but for hasty reference on his part, or for reference on the part of the novice in such matters, Minett's text can be most cordially indorsed.

ESSENTIALS OF NERVOUS DISEASES AND INSANITY. Their Symptoms and Treatment. By John C. Shaw, M.D. Fifth Edition, Thoroughly Revised. By Louis Cassamajor, M.A., M.D. Illustrated. The W. B. Saunders Co., Philadelphia, 1913. Price $1.00.

Five editions of this little quiz book have appeared in the last twenty-two years. It is designed to enable the student to brush up prior to an examination in nervous and mental diseases, but it is much too brief, even for a book of its type, to accomplish this adequately, and there is no use in utilizing some of the space needed for other things by giving a bibliography of journals in foreign languages which no one except a student of advanced neurology would be prone to resort to. Altogether the text covers 163 pages. So far as it goes it seems up to date and worthy of confidence.

THE PRINCIPLES AND PRACTICE OF MEDICAL HYDROLOGY. Being the Science of Treatment by Waters and Baths. By R. Fortescue Fox, M.D. The Oxford University Press, New York, 1913. Price $2.00.

Baruch's well-known book on Hydrotherapy has for a number of years been the chief work of reference and study among American practitioners. The present volume is much smaller in size than that of Dr. Baruch, but the author is equally enthusiastic in advocating the use of waters both when used for bathing and when ingested for the cure of disease. The author recognizes the value of Dr. Baruch's work in this country in his historical summary of the use of hydrotherapy in various parts of the world, and then proceeds to give a description of many of the important English and European spas, with directions as to the conduct of a physician at a spa. The volume is not one which will give the general practitioner much detail as to methods which he may himself institute, but does give him a good deal of information in regard to the qualities and therapeutic efficiency of the waters and baths which are employed at well-known health resorts in England and Europe.

THE AMERICAN POCKET MEDICAL DICTIONARY. Edited by W. A. N. Dorland, M.D. Eighth Edition, Revised and Enlarged. W. B. Saunders Co., Philadelphia, 1913. Flexible Leather, $1.00. Thumb Index, $1.25.

Dorland's large dictionary became some years ago one of the standard lexicons in the English-speaking world. The present small volume has been carefully revised, and practically all the new terms used in medicine, surgery and collateral sciences have been introduced. The words themselves are in heavy-faced type, the definition in smaller type, and the paper, while thin, does not show the register and does not for this reason strain the eye. As a book for constant reference for both students and medical men it can be most cordially commended.

ESSENTIALS OF BACTERIOLOGY. By M. V. Ball, M.D. Seventh Edition. With the Assistance of Paul G. Weston, M.D. The W. B. Saunders Co., Philadelphia, 1913. Price $1.00.

Seven editions of this little manual have appeared in twenty-two years.. During that time it has been kept well up to date by the author or by his assistants. Illustrations are used when necessary to add to the value of the text. Belonging to a series of so-called Question Compends, it is essentially brief and to the point. It is inadequate as a text-book, but very competent as a book of its class.

CLINICAL DIAGNOSIS AND URINALYSIS. By James R. Arneill, A.B., M.D. Second Edition, Revised and Enlarged. Illustrated. Lea & Febiger, Philadelphia, 1914. Cloth, $1.00.

There is more justification for the publication of a small condensed manual of this character dealing with its particular subject than there is for the publication of similar volumes dealing with more gen-

eral topics like the Practice of Medicine and Surgery. The object is to give the student and the practitioner a condensed statement of the methods which are necessarily employed in the study of disease by laboratory methods of diagnosis. At the end of each section there are a series of questions designed to quiz the student upon the teachings of that particular part of the book.

ESSENTIALS OF GYNECOLOGY. Arranged in the Form of Questions and Answers. By Edwin B. Cragin, M.D. Eighth Edition, Thoroughly Revised. By Frank S. Matthews, M.D. Illustrated. The W. B. Saunders Co., Philadelphia, 1913. Price $1.00.

To see the name of so well known an obstetrician upon the front page of so small a book dealing with such an important topic seems odd. Doubtless the author prepared the original text in his early medical days, and this explains why it is that a younger man has been called upon to revise the last edition, the publisher being unwilling to allow so popular a volume to go out of print. The great popularity of small books of this kind and the fact that they were written by men who in future years became noted in their professional work show that they have a field of usefulness, not to supplant more complete volumes but to refresh the memory of the overcrowded mind of the ordinary medical student.

ANATOMY AND PHYSIOLOGY. A Text-book for Nurses. By John F. Little, M.D. Lea & Febiger, Philadelphia, 1913.

The scope of this book is very well described in the title page. It contains a large amount of information which is useful for a nurse but does not pretend to be sufficiently thorough to meet the requirements of a medical student or physician. The text is accurate, the scope not too wide, and the instruction given clear and concise.

THE INTERNATIONAL CLINICS. Edited by Henry W. Cattell, A.M., M.D. The J. B. Lippincott Co., Philadelphia, 1913. Volume IV, Twenty-third Series.

The present issue contains useful articles by a number of well-known men on the subjects of diagnosis and treatment, medicine, neurology, surgery, and eugenics. The illustrations are excellent, and the subjects dealt with are in the main practical in their nature.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

Sir Almroth Wright has just published the second part of his report on the causation and treatment of pneumonia among native laborers in the Rand mines. The first part of the report, which was published a year ago, dealt with the treatment of pneumonia by drugs, and demonstrated the fact that no known drugs have a specific effect upon this disease. The second part of the report deals with the question of vaccination as a method of prophylaxis, and details the experiments carried out with the pneumococcus vaccine. These experiments showed that African natives are not capable of developing a bactericide in their blood toward pneumonia germs, and that their response to the process of immunization is far less than in the case of Europeans. This susceptibility is probably due to the fact that pneumonia is unknown in the native villages, and therefore the population have had no opportunity of becoming "inured" to the disease. The report goes on to describe the preventive measures which ought to be taken to diminish this scourge. These include the early detection and isolation of cases of pneumonia, the provision of measures for the ventilation and disinfection of sleeping quarters, and the placing of convalescents in quarantine. Measures should also be taken to improve the personal condition of the native mine workers, by giving them "change sheds," in

which they will be compelled to change their clothes before emerging into the open air from the mines. But these measures will never stamp out the infection, though they will probably improve matters, as there will be a great deal of difficulty in carrying them out properly. Sir Almroth Wright, therefore, recommends that inoculation should be practiced as a preventive measure, in order to increase the resisting power of the blood to this particular infection. The report gives fully the methods of preparing pneumonia vaccines, and also discusses the question of a suitable dosage in order to secure the best possible effects.

The possibility of a State Medical Service is acquiring something more than an academic interest, now that the disadvantages of the panel system entailed by the National Insurance Act become more obvious. Sir John Collie, lecturing on "The Medical Profession and National Insurance," pointed out that the act had failed to secure adequate treatment for insured persons, as serious diseases still had to be treated in charitable institutions. He believed that a State Medical Service ought to be organized on such lines as to cover not only all workers, but all their dependents and those unable to provide for themselves. He proposed that complete services, consisting of consultants, surgeons, specialists, and general practitioners, should be established in all the large centers of population, while part time specialists would do the work in smaller places. He contended that this system would be less extravagant than the present panel system, and vastly more effective. The doctors would not be overworked, and would have regular holidays, with the prospect of a pension at the end of a certain number of years. They would also be given opportunities for postgraduate study, which would help to keep the service up to date. Sir John Collie pointed out that the establishment of such a service would permit the definite linking together of preventive and clinical medicine. Although Sir John expressed his belief that such a service is inevitable, the profession as a whole is hardly prepared to welcome it, but in two years' time there will be an opportunity to gauge the feeling on the subject, as the whole panel system of the Insurance Act will then be under review and subject to revision.

The feeling against the National Insurance Act in the medical profession has led to the formation of a National Medical Union, a federation of all the local associations of medical practitioners, who have declined to place their names upon the panel for service under the act. The objects of the Union will be to maintain the freedom of the profession in its relations to the public, to oppose the present arrangements for medical benefits under the National Insurance Act, and to preserve an independent attitude with regard to party politics. This new organization is pledged solely to regard non-panel interests, and as such will probably run counter to the other movement in the profession toward a closer union between State and Medicine.

The first year's working of the Insurance Act has provided some interesting statistics. A sum of nearly thirteen millions has been paid out, of which four and a half millions have gone to doctors for medical treatment, maternity benefit has cost one and a half millions, and the treatment of consumption another quarter of a million. For the treatment of consumption over 200 residential institutions have been approved in England alone, and over 15,000 persons have been treated in such institutions. The act has forced local authorities to formulate schemes in their own districts for the treatment of consumption, and as a result 3000 more beds will be available in the near future. Meanwhile there is a steady decrease in the mortality from phthisis. This is attributed to an increasing resistance on the part of the individual to this infection.

The new buildings of the National Hospital for Diseases of the Heart were opened a short while ago by Prince Arthur of Connaught. The original hospital was founded in 1857 in a small house, and the staff consisted of one medical man and two voluntary nurses. Later on the hospital was enlarged and removed to Soho Square,

where it has remained until the present time. The latest building will contain 40 beds and will be supplied with all the most modern appliances for treating heart complaints. Among these is the electrocardiograph, devised by Prof. A. D. Waller, by means of which communication is established between the patient in the ward and a distant laboratory, so that while the patient is being treated in his bed the record can be watched by the physician at a distance. The whole accommodation of the hospital will not be available until the debt on the building has been paid off.

It appears now that the announcement of the amalgamation between St. George's and Westminster Hospitals was somewhat premature. It may be remembered that a few months ago an announcement was made that these two hospitals intended to sell their present valuable sites, migrate to the south of London, and form a joint hospital. It was further understood that the Canadian government was to buy the Westminster site for a Dominion building, and that the St. George's site had been secured by a prominent financier for the erection of a palatial hotel. But both these prospective purchases have fallen through, and the hospitals cannot move until they have secured satisfactory prices for their sites, both of which are extremely valuable. In addition to this the settlement of the actual details of an amalgamation has given rise to unexpected difficulties, and though the principle of amalgamation has been approved by both sets of governors, it seems extremely doubtful if the two hospitals will, after all, join forces in the south of London. The great success attending the removal of King's College Hospital south of the river has demonstrated the need for more hospital accommodation there, and there is abundant room for the work of one or two more large hospitals.

Mr. Sydney Holland, the indefatigable chairman of the London Hospital, has announced that the £100,000 for the London Hospital to supply pressing needs, for which he made a special appeal, has now been raised. The London Hospital is by far the largest hospital in the kingdom, and it requires £113,000 a year to carry on its ordinary work. The extra money raised by this appeal is to be spent in special treatments and pressing necessities outside the ordinary expenditure, but it will not meet the expense of the new ward for salvarsan treatment, for which a special appeal has not been made.

NOTES AND QUERIES.

A CLEAR VIEW THROUGH A WET AUTOMOBILE WIND SHIELD.

Harold Snipe describes in the *British Medical Journal* of September 20, 1913, a method of obtaining a clear view through the wind shield of an automobile even in the wettest weather. The following solution is applied to the wind shield:

℞ Sodium chloride, 1 drachm.
Water, 1 ounce.
Glycerin, 2 ounces.

A little of this is placed on gauze and wiped over the glass in a very thin layer, but always in a downward direction. This is a boon on a wet night on a dark road.